The
Practical Teacher
A MONTHLY EDUCATIONAL JOURNAL.
Edited by JOSEPH HUGHES.

'*Knowledge is proud that he has learned so much,*
Wisdom is humble that he knows no more.'—COWPER.

VOL. XII. NO. 8. FEBRUARY, 1892. PRICE, 6D. POST FREE, 7½D.

ELEMENTARY LESSONS IN AGRICULTURE.

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VIII.

ADVANTAGE TO THE PLANT OF TILLAGE AND DRAINING.

WE have seen, in our section on 'The Soil and its Relation to the Plant,' that certain mineral substances—potash, lime, iron, phosphorus, sulphur, and magnesium—which are left behind in the form of a white ash in the burning of the plant, are derived from the soil in which the plant was grown, being part, indeed, of its food. We have seen, too, that this food, so contained in the soil, exists in two conditions—*active* food material, so called because it is immediately soluble in water or weak acids, and is therefore ready for use; and *dormant* food matter, so termed because it is not immediately available by the plant, but requires to be turned into active matter of which the growing plant can at once make use.

We have seen, too, that a soil, to be fertile, or well adapted to the growth of plants, must be well stocked with active or available plant food, and possess a further store in the dormant condition, ready to supply the other as fast as it becomes used up.

Since we have studied, too, the manner in which the plant is fed by these materials as well as by those present in the air, we are now in a position to understand some of the operations of agriculture, and to see how they are brought to bear on the question of enabling the plant most easily to take in its food, and to appreciate some of the difficulties attending this necessary action, as well as to see how agriculture enables these difficulties to be overcome. Of these agricultural operations we will first look at those of tillage, or mechanical work done upon the soil in preparing it for the crop, and drainage, or the regulation of the water which the soil shall contain. Both these have a great influence in allowing the plant to use the active material, and on the changes brought about in the dormant matter.

Taking first the question of tillage, which includes all such acts as ploughing, harrowing, rolling, etc., we find that by its means the soil is broken up into a finely divided condition which is advantageous to the roots in their downward growth, as they can more easily make their way between the particles. The weeds growing over the field are injured or destroyed, and so the plant food is saved for the proper crop. The air has freer access into the mass of the soil, and the oxygen contained in it can provoke those chemical changes which, as we have seen, lead to the change of the reserves of plant food into a condition in which the plant can use them. This is very important, because the action of the oxygen helps greatly to produce compounds of nitric acid from the humus, or decaying organic matter, which we have seen to be present. Tillage also promotes drainage. This subject we shall consider presently in its relation to the growth of the crop.

When we were examining the relation of the plant to the soil, we saw by a simple experiment—the cultivation of a sunflower in a flower-pot—that although a plant may be abundantly supplied with nutriment, it will suffer in health and vigour by the confinement of its roots within a small portion of the soil. Seeds are sown at a comparatively shallow distance from the surface, and it is necessary that the soil through which

the young shoot will have to force its way shall be free enough to allow it to do so freely. It is also of the greatest importance that the roots of the young crop shall be able to penetrate freely that part of the soil that lies near the surface, and that no obstruction to their downward growth, which shall confine them to a few inches only of depth, shall be permitted to exist. Such an obstruction, whether natural or artificial, results in a farmer obtaining a smaller crop than his land ought to yield; for the root's powers of searching for food are greatly limited by this confinement. Increase of the depth of soil gives the plant more opportunities of obtaining the nourishment essential to its growth, and the more complete the division of the soil, the more easily will the roots penetrate through the land, and so use what is stored there. Different plants require different depths thus to be left open to them; some of our leguminous crops strike their roots very deeply down, while the corn crops have much less root development.

Another advantage of tillage is to promote the movement of water in the soil, and to render it possible for the surface to draw a supply from below in time of drought. The force which is at work in causing this is called capillary attraction. We have seen in discussing the relation of the plant to the soil, and the feeding of the plant, that the delicate hairs of the roots absorb water only from the thin fluid films, which surround the particles of soil with which they are in contact. This water contains their mineral food, so that a certain amount of water in the soil is indispensable to the life of a plant. We have seen that on placing a tube with a very fine bore upright in a vessel of water, the water rises in the tube to a higher level than it stands at in the vessel. By trying this experiment with tubes of different bores, you will see that the finer the tube, the greater is the height to which the water will rise in it. This principle is the principle of capillary attraction, and it holds good in the soil. There the passages, instead of being straight and regular as in the tubes, are irregular in shape, and made up of broken particles of soil; but the finer the passages, the greater is the height to which the water rises. Now, if the particles are large and irregular, it is impossible for them to form small passages for the water; the size of the passages depends on the fineness of the soil, and so a fine subdivision favours the supply of water to the roots. This is especially useful when from lack of rain-fall the surface becomes dry, and the only water available for the plant is that situated some little way down.

The advantage derived from the destruction of weeds will be familiar to all of you who have had the care even of a tiny garden plot, in which they have tried to choke your flowers. They are the rivals of the farmer's crop, and unless kept under, they will, by absorbing the nourishment required for its growth, impoverish or destroy it. Spud and hoe, and the plough which cuts every weed, all play their part in dealing with these enemies of cultivation.

Of the various advantages brought about by tillage, that of the increased production of nitrates must be reckoned among the most important. The feeding of the plant must include the supply of everything the plant wants for forming its protoplasm or living substance, and one of the constituents of this substance is nitrogen. This nitrogen can only be obtained through the roots, in the form of compounds containing it; the most advantageous forms of these being those which consist of nitric acid in combination with soda, potash, or ammonia, though the compounds of ammonia with other acids are almost as useful. The decayed vegetable matter which we have called humus is a very prominent ingredient of soils, and this contains large quantities of nitrogen. Generally speaking the richer a soil is in humus, the greater is the amount of nitrogen present. It is not in this condition, however, that the nitrogen is most available for the growing plant. It needs a considerable amount of change to fit it for absorption by the roots. This change is largely brought about by the presence of bacteria, or germs, in the soil. Now, though these organisms are very widely distributed in the earth, they are more numerous in the surface soil, and their activity extends to varying depths. The more porous the soil a little below the surface, the greater is the depth to which their influence extends. These organisms possess the power of forming nitric acid from certain other compounds of nitrogen. To enable them to do this, and at the same time to fix or retain the nitric acid they form, some amount of moisture must be present, and some chemical body must be there which can combine with it as it is formed. We find here the explanation of the value of the lime salts, chiefly the carbonate, which fertile soil contains. The process is one, too, which requires oxygen, and so the ready access of air is again of evident utility. There is also the possibility of soils absorbing some ammonia from the air, though the atmosphere contains but a trace of this gas. Soils which are rich in humus or in clay have a greater power than others in thus fixing atmospheric ammonia. Thus the porosity of the soil, by making easy the entry of air, plays a great part in changing dormant material into active food.

Tillage operations include the use of various agricultural implements. Of these, the plough is the most universally employed. By its use the surface of the soil is turned over to a depth of several inches, exposing to the influence of the weather a totally new face of earth. This is usually done in the autumn, so that the frost of winter can be brought to bear upon the seedbed. The frost, acting on the water shut up in the soil, helps to disintegrate the mineral constituents of the earth, reducing the clods to powder. Other implements, such as the cultivator and the harrow, are of great value. They do not turn the earth over, like the plough, but they stir and loosen the ground, and cut weeds so that they perish. Such implements are generally used in the spring, because they do not bury the fine mould formed during the winter, as the plough would do if used. Rollers, again, are employed to improve the surface, pressing the loose earth more closely together, and so tending to check evaporation, and also pressing the earth about the roots of the crops that have stood the winter.

The effect of the porous condition of the soil in improving its drainage leads us to consider the second agricultural operation to which we have called attention.

The relation of the water to the soil is a very intricate one. We have seen that if the interstices of the

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soil are filled with water the plants are unable to make use of it. The water must exist as a thin film around the particles, and any excess only clogs the soil and prevents the access of the air which we have shown to be so necessary. Drainage must, therefore, be carried out to relieve the land from this excess.

We have seen how valuable in time of drought is the capillary attraction which draws water from the subsoil up to the surface when the latter is dry. If, however, the land be sodden at the surface, this capillarity becomes an evil. The vast quantity lying there has to undergo evaporation into the air, and this process is accompanied by a great fall of temperature, so that the land is cold—too cold, indeed, for vegetation to flourish. If we compute the amount of heat required to evaporate water, we find how greatly the earth must suffer. There is an experiment recorded in which thermometers were inserted into a bog in Lancashire, part of which was drained and part undrained. Seven inches below the surface, the temperature of the drained part was 10 degrees higher than that of the undrained. The warmth required by the crop is thus wasted in evaporating water. This stagnant water acts also prejudicially in not permitting the rain to percolate through the soil. Rain water contains a good deal of matter which it leaves behind in the soil as it sinks through—traces of carbonic acid, ammonia, and nitric acid ; and, as we have seen, the presence of these in water in the soil helps in dissolving many of the mineral constituents found there.

In another respect, excess of water is bad for the plants. Water is a very bad conductor of heat, and thus must prevent the land from getting all the advantage it should from the direct rays of the sun when these fall upon. When heat is applied to the top of the soil, if the latter be wet the heat penetrates very slowly, while if the pores of the surface be filled with air the passage is much easier and more rapid.

The absence of drainage has also an injurious mechanical effect upon the soil. If water cannot pass away naturally it accumulates on the surface and makes its way from this to ditches and rivulets, carrying with it a good deal of the best of the mould, such as the finer particles of the earth, and much nutritive matter which ought to be carried down to the roots of the plants. The roots themselves are made unable to carry out respiration, which we have seen to be so necessary to them. They are surrounded by water, which contains little oxygen, instead of by air, which affords a large amount. The wet prevents them from breathing, and they consequently suffer and ultimately die out. Various diseases also attack them in this condition, moulds of various kinds preying on their tissues.

Lastly, instead of the soil being the scene of active nitrification, the very reverse takes place, the nitrates being destroyed or broken up, and in some cases a part of the nitrogen being actually evolved. There is thus an absolute loss of a good deal of the plant food.

If we turn now to consider what actual advantages accrue through proper drainage, we find these even more apparent than we should think from the foregoing considerations. The plant having lived its life under proper conditions, it reaches its maturity sooner, and is much more fully developed. The harvest is thus more adundant in quantity and the quality of the produce is much finer. The land, too, is capable of bearing a far greater variety of crop, certain crops, indeed, failing utterly under the adverse conditions described. The farmer gains, further, by the greater ease with which he can carry on his tillage operations. The application of manure, which we shall study presently, is much more efficacious, and a great deal of waste is thus prevented.

English agriculture especially, is benefited by the early ripening of the crops. An early harvest is generally much more profitable to the farmer than a late one, and a hastening of it by only a fortnight often makes all the difference between a good and a bad season. The warmth of a July or August sun is much greater than that of a September one ; and with the greater warmth the ripening of the crop is brought about more readily, with much better results to the quality yielded. The land is cleared, too, of the crop in better time for the autumn tillage operations, including the growth of second crop upon the land. The influence of drainage upon the quantity of the yield is very great, as much as eight bushels of wheat per acre having been gained in some cases from the change thus brought about in the soil.

The working expenses of the farm are also affected by the condition of the land. If the soil contain much clay, the ordinary operations cannot be carried out when it is wet. If not properly drained, therefore, the number of possible working days is much less than if the drainage be good. It is, again, far more difficult to till the sodden land than the well drained, and the extra expenditure of labour, both of man and beast, forms a serious item in the year's expenses.

We must notice, too, the influence which sodden land and stagnant water exert in the health of the cattle of the farm, and of the agricultural labourer employed on such land. These no agriculturist can afford to despise.

We mentioned just now that the temperature of the soil was lowered by the presence in it of too much water. Drainage improves this in a most marked degree. The passage of rain water through the soil has a direct effect in raising the temperature round the roots. In some observations that are on record, the temperature of the soil was noted in June while rain was falling. At a depth of seven inches that temperature was 60° F.—at two feet it was only 50° F. Now the air at the time was 78° F. and the rain falling was about as warm. We have thus an actual carrying of warmth equal to nearly 20° F. into the surface soil. If the water could not have penetrated, through lack of drainage, this warmth would certainly have been lost to the plants, and would have made a very serious difference to their growth.

A soil that is well drained will thus be seen to contain at different times very different amounts of water. A drained soil is quickly dried, and as quickly recharged with water. Now, we have seen that in drying it contracts ; in becoming wet its particles expand. This alternation of wetness and dryness, therefore, aids very markedly in the pulverisation of the soil. The various meteorological influences all work together, though at different times, to the same end. Frost in winter is a powerful agent, but it is ably seconded by rain and warmth in the more open seasons. Wet rapidly draining away and succeeded by heat will crack

the surface, the fissures extending deep down and so allowing the atmospheric influences to penetrate much more deeply. Heat applied to an undrained soil will bake and harden the surface, doing harm instead of good.

It seems rather paradoxical, but it has been said by eminent agriculturalists that the problem of drainage is not that of removing water from the soil, but rather that of drawing the water into it. The percolation of the soil by water is seen to be of the utmost necessity, both in the interests of the soil itself and of the plants which find their home thereon. The various benefits already noticed will be seen to be only part of those so afforded, when we come to consider the applications of manures, and the way in which they supply the plants with much valuable food material.

To recapitulate, we see that :—

1. The advantages secured to the plant by tillage may be treated under five heads :

(*a*) The soil is broken up into a finely pulverised condition, so that both root and shoot may grow freely through it.

(*b*) The weeds are destroyed and so prevented from using the food supplied for the crop.

(*c*) The air is afforded free access to the soil, promoting the proper growth of the roots, and the preparation of food from the dormant reserves.

(*d*) There is especially favoured the production of nitrates.

(*e*) The surplus water is easily got rid of, while the free movement of water in the soil is promoted.

2. While a proper supply of water is necessary for the existence of the plant, stagnant or stationary water is in the highest degree injurious to it. It lowers the temperature of the soil by evaporation, and because it is a bad conductor of heat. It injures the soil, and therefore the plants grown thereon, by preventing the beneficial action of air and rain. It must, therefore, be removed by drainage.

3. The absence of drainage leads to a mechanical injury to the soil by the overflow of water. The land becomes impoverished by the finer particles of soil and valuable fertilising matter in solution being carried away and wasted.

4. Many practical benefits result from land drainage, among which may be mentioned an earlier and more abundant harvest, a better quality of produce, a greater variety of crops, easier and less expensive tillage, a more effective application of manure, and an improvement in the health of both man and beast by the removal of the stagnant water.

5. Drainage has a very important influence, not only in bringing the food to the plant and enabling it to be nourished thereby, but also in affording to the roots the warmth they need for the proper discharge of their functions.

6. The varying amount of water in a well-drained soil is a very important factor in securing all the beneficial results of the various climatic influences to which the land is exposed. Frost in winter, rain and warmth in summer, act very powerfully in making the soil a suitable home for vegetable life.

(To be continued.)

NEEDLEWORK FOR PUPIL TEACHERS.

BY MISS SOPHY LOCH,
Examiner of Needlework to the London School Board.

(*Continued.*)

THE next things which are required to be shown by the first-year pupil teachers to H.M.I. on the day of inspection are 'Paper Patterns' (cut out and tacked together) of two garments suitable for children in Standards III. and IV. If we look at the Code, we shall see that these garments may include a pinafore, shift, apron, plain nightshirt, nightgown, petticoat, or any garment shewing the stitches required in Standard IV., so that the range of choice is great. In some cases, where permission has been given, these garments have been cut out in material. For instance, when an apron has been chosen as one of the selected garments, it has been cut out of some pretty fancy material, and tacked together ready for the pupil teacher to make up after the inspection, to wear during her second year of training for her work lessons. But, as a rule, these patterns are cut out in paper, as set down in the Code.

The paper to be used for these garments must be chosen with much care. The thin *lined* paper is the best, as the lines show so distinctly the way of the material; the right and wrong side is also clearly defined. The thick lined paper is too bulky, and ordinary whitey-brown paper tears very easily. Newspaper is not to be recommended in any way. Every pupil teacher should provide herself with a note-book, a few sheets of which might be made of sectional paper. All the required patterns could be drawn on these sheets, also any diagrams useful in teaching needlework. The notes of lessons in needlework, statements, or descriptions of the various patterns, and rules given for different sizes of the garments, could be written on the plain leaves of the note-book. If good and useful patterns are given, they will be of the greatest assistance to the girls afterwards. It is best to choose garments of simple make, not full of elaborate detail, as it is difficult to make the latter look well in paper. Whatever pattern be chosen, the edges of the paper must be cut perfectly smooth, with no notches. That part of the garment which would be arranged for a sew and fell seam, if made in material, should be turned in the same way in paper, and the two edges neatly tacked together with basting cotton with small neat stitches. Hems should be turned twice and tacked. Gathers should never be attempted in paper, but neat pleats should take their place. In putting these paper garments together, quite as much care must be taken with the *finish* as with those made in material, and the paper must be kept fresh and uncreased.

The sock required from the first-year pupil teachers does not need much comment. A *pair* of socks should always be made, as one is of no practical use, and good wool should be chosen. If a pair are made, both socks should be started at the same time and kept going together. When finished they should not be ironed, as this is strictly against rules, but should be carefully folded like shop socks, and tied up between two pieces of millboard. This makes them perfectly smooth, and stores them well. We have now come to what is by far the most difficult thing the pupil teachers have to

work up, viz., how to manage and arrange different exercises out of the little piece of calico prescribed by the Code for use on the day of examination. This piece of calico measures 9 × 9, and it requires a good deal of careful thought to learn how to make certain exercises out of these little pieces of material, paying due regard to the right way of the stuff.

We will now go through some of the exercises suitable for first-year pupil teachers to see how they are best obtained :—

EXERCISE I.—*To make a closed wristband for a boy's nightshirt, and stitch not less than half of it.*

Time allowed, one hour.

Material, 9 × 9. The arrow marks the way of the self-edge.

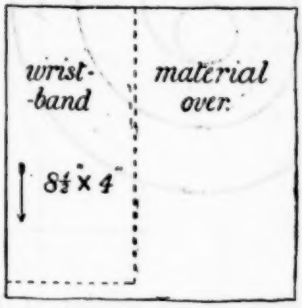

Fig. 39.

This exercise is comparatively easy, and can be well done in the time allowed. After the pupil teacher has ascertained what she is required to make out of the piece of calico before her, she would do well to pause for a minute or two and think it over, making up her mind what size she intends making the wristband, and which way of the stuff she will cut or tear it. Sometimes the student gives herself no time for reflection on these matters, but rushes at the material, snips and tears off a piece, and then finds to her dismay she has taken the wrong way of the stuff, and all chance of producing a sensible piece of work is lost. First then, let her pull the piece of calico into shape, so that it forms a perfect square ; secondly, take a pin and mark the way of the self-edge. The material should then be placed on the desk with the self-edge running from north to south. The width of the wristband should then be measured off and marked with a pin ; the same must be done with the length. The piece of material must then be torn off and pulled perfectly straight; it must measure exactly the size required, neither more or less. An inexperienced worker sometimes thinks it does not make much difference if half an inch here or a quarter of an inch there be added or taken away through careless measurement; but it of course makes all the difference in a carefully proportioned garment.

The two long raw edges of the band must then be put together, thus

folded edge.

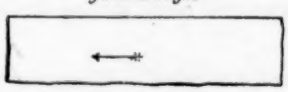

Fig. 40 (*a*).

The folded edge must be pinched between the finger and thumb to make it lie quite flat, and it should be even to a thread.

A thread should be drawn for stitching about a quarter of an inch from the folded edge—as in diagram—

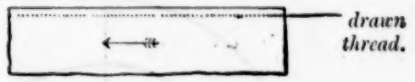

Fig. 40 (*b*).

After the thread is drawn the two short sides are turned down once on to the wrong side and tacked carefully together ; the drawn threads should lie exactly opposite each other. The two pieces must then be run and back-stitched together in the crease made by the turning down. The raw edges must be turned out flat.

Fig. 40 (*c*).

After this is done the waistband is doubled and tacked carefully down the *centre*, and also between the folded edge and the drawn thread. The tacking-cotton must not be drawn too tightly, or the work will be puckered.

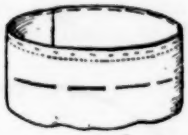

Fig. 40 (*d*).

The wristband is now ready for stitching. It must not be commenced where the wristband is joined.

Fastening on for stitching.—The needle should be passed between the two thicknesses of material and brought out at the required place, leaving the end of cotton between the double stuff ; one stitch is taken back, the needle being brought out where it was originally. This fastens on the cotton securely. As much of the wristband must now be stitched as time will permit, the worker remembering that *good finish* and *industry* are important factors in obtaining marks in the subject of needlework. The cable back should be made in stitching, and is, of course, obtained by putting the needle in either always above or always below the last stitch at the back ; the straightness of the stitch in front must not be sacrificed in doing this. In the next paper the method of obtaining other exercises out of the piece of calico 9 × 9 will be shown.

(*To be continued.*)

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Time allowed, one hour.

Material, 9 × 9. The arrow marks the way of the self-edge.

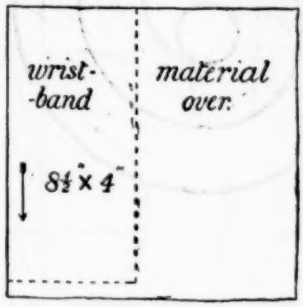


Fig. 39.

This exercise is comparatively easy, and can be well done in the time allowed. After the pupil teacher has ascertained what she is required to make out of the piece of calico before her, she would do well to pause for a minute or two and think it over, making up her mind what size she intends making the wristband, and which way of the stuff she will cut or tear it. Sometimes the student gives herself no time for reflection on these matters, but rushes at the material, snips and tears off a piece, and then finds to her dismay she has taken the wrong way of the stuff, and all chance of producing a sensible piece of work is lost. First then, let her pull the piece of calico into shape, so that it forms a perfect square ; secondly, take a pin and mark the way of the self-edge. The material should then be placed on the desk with the self-edge running from north to south. The width of the wristband should then be measured off and marked with a pin ; the same must be done with the length. The piece of material must then be torn off and pulled perfectly straight; it must measure exactly the size required, neither more or less. An inexperienced worker sometimes thinks it does not make much difference if half an inch here or a quarter of an inch there be added or taken away through careless measurement; but it of course makes all the difference in a carefully proportioned garment.

The two long raw edges of the band must then be put together, thus

folded edge.

Fig. 40 (*a*).

The folded edge must be pinched between the finger and thumb to make it lie quite flat, and it should be even to a thread.

A thread should be drawn for stitching about a quarter of an inch from the folded edge—as in diagram—

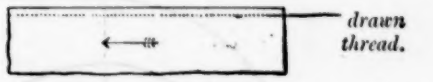


Fig. 40 (*b*).

After the thread is drawn the two short sides are turned down once on to the wrong side and tacked carefully together ; the drawn threads should lie exactly opposite each other. The two pieces must then be run and back-stitched together in the crease made by the turning down. The raw edges must be turned out flat.

Fig. 40 (*c*).

After this is done the waistband is doubled and tacked carefully down the *centre*, and also between the folded edge and the drawn thread. The tacking-cotton must not be drawn too tightly, or the work will be puckered.

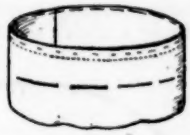


Fig. 40 (*d*).

The wristband is now ready for stitching. It must not be commenced where the wristband is joined.

Fastening on for stitching.—The needle should be passed between the two thicknesses of material and brought out at the required place, leaving the end of cotton between the double stuff ; one stitch is taken back, the needle being brought out where it was originally. This fastens on the cotton securely. As much of the wristband must now be stitched as time will permit, the worker remembering that *good finish* and *industry* are important factors in obtaining marks in the subject of needlework. The cable back should be made in stitching, and is, of course, obtained by putting the needle in either always above or always below the last stitch at the back ; the straightness of the stitch in front must not be sacrificed in doing this. In the next paper the method of obtaining other exercises out of the piece of calico 9 × 9 will be shown.

(*To be continued.*)

TEACHERS' NOTES OF DRAWING LESSONS FOR STANDARD IV.

By E. BUFFERY RIDGE, *Art Master under the London School Board.*

FREEHAND FOR STANDARD IV.

To get thin lines—depend on lightness of hand, not on sharp pencil points.

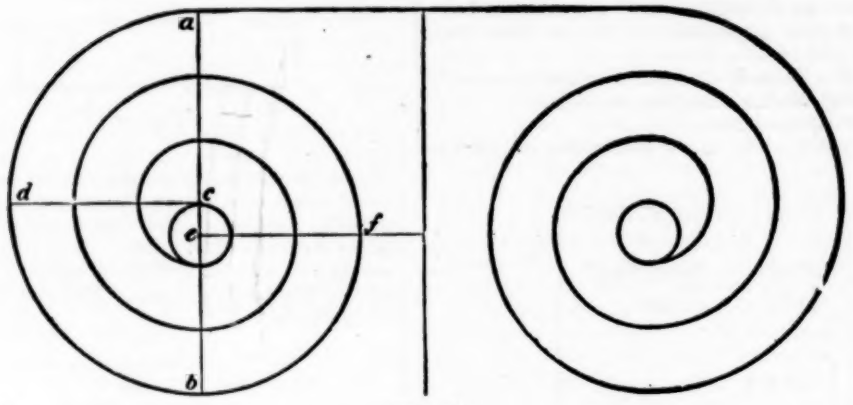


Fig. 6.

Spirals.

8, 9, and 10. Draw the left-hand half first, then the right-hand, then the two together, as three separate drawings.

8. Draw the upright line *a b*, divide into two parts at *c*, and each half into three, making **six** equal parts. Draw *c d* equal to three parts, and mark them on it. Start at *a*, making a half-circle to *b*. Mark *e* half a part below *c*, and draw *e f*, marking on it first half a part then two parts; *e* will be the centre for the half-circle through *f*, and for the others on that side of the centre line; *c* is the centre for half-circles on the other side.

Rub out straight lines and mind two things—first, that the half-circles run into each other without showing the join; second, that the road round between them from *a* to *d*, *b*, *f*, round again to *c*, and stopping at *e*, is always the same width.

9. Draw the same figure reversed (the right-hand side) without guiding lines, except one down the middle.

10. Draw both sides, forming a symmetrical figure. Such a spiral as this would answer for a watch-spring, but it would not do for a snail's shell. The tail would be as thick as the head and the rest of the body.

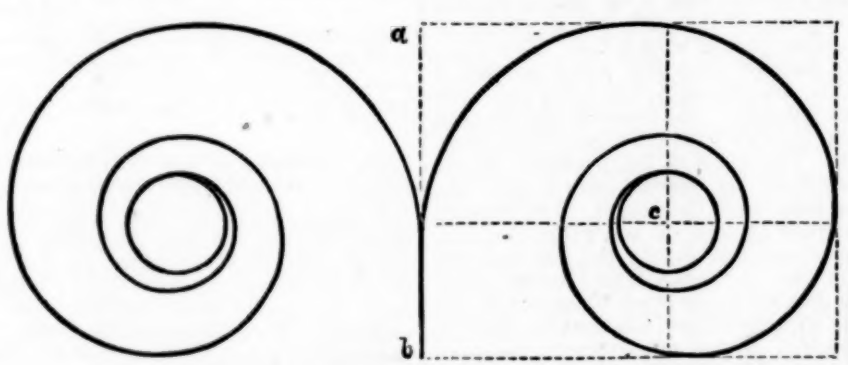


Fig. 7.

11. Here the road round gets gradually narrower, just as you see in a winkle shell, and as you see also in the winkle itself when it is fetched out—the tail tapers off to a point. Draw the left-hand curve. Guiding lines are not of much use; do without them; draw the small circle in the centre, and start there. Remember that the curve is nowhere else part of any circle, but always opens itself more and more, getting straighter as you go on.

12. Draw the right-hand half.

13. Draw both together from centre line *a b*. *Helix* is another name for a *spiral*. Whenever you see one, notice which sort it is and which way it turns.

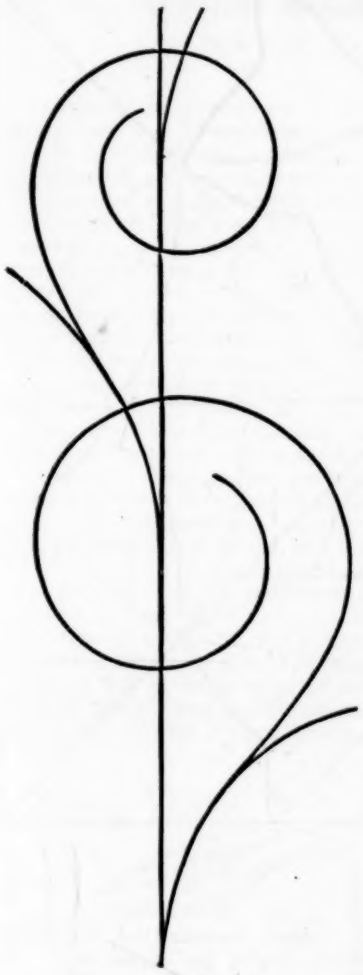


Fig 8.

14. Examination copy. Make the small offshoots flow smoothly into the curves, and the same with the curves themselves and the centre line. Compare the heights of the two curves up the centre line with each other and with their widths. Note especially the space *between* the two spirals.

15. An oakleaf drawn from nature. It is nearly, but not quite, symmetrical.

Draw one leaf twice the size of the copy, starting with the middle vein or mid-rib ; next, the other veins, noticing how they run into and down the mid-rib towards the stalk. Look carefully at the curves forming the notches and lobes of the leaf. They are not exactly alike, but are all of the same nature.

16. Draw a semi-circle (same size as copy, or a little larger), divide into three parts, draw lines from the divisions to the centre. Place a leaf in one division, and repeat it in each of the other divisions. Take as much pains with the last as with the first, and see how well you can manage the fine lines of the veins.

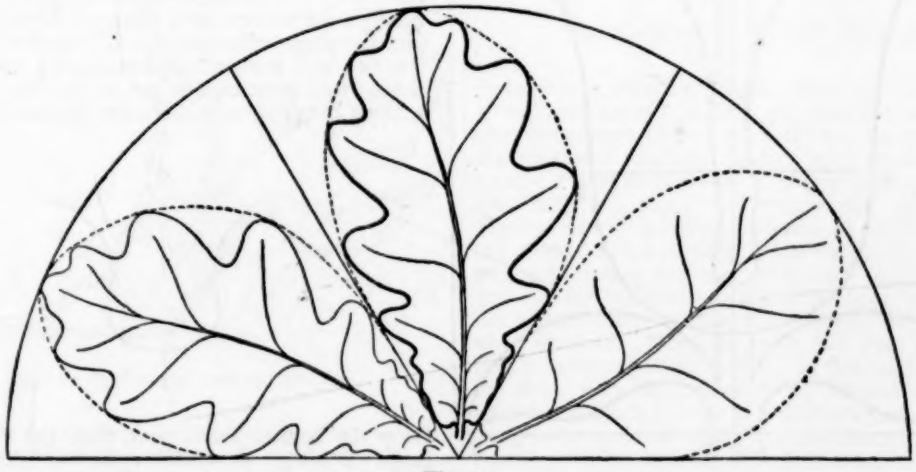


Fig. 9.

17. Ivy leaf from nature. One leaf, larger than copy. Notice the dotted lines showing how different parts of the leaf agree with each other.

18. Draw a square (same size as copy) with diagonals and cross lines, and fill it with four ivy leaves.

In this case the leaves fill up the space better with the points at the centre, while in the last example the oakleaves fit in best with their stalks towards the centre.

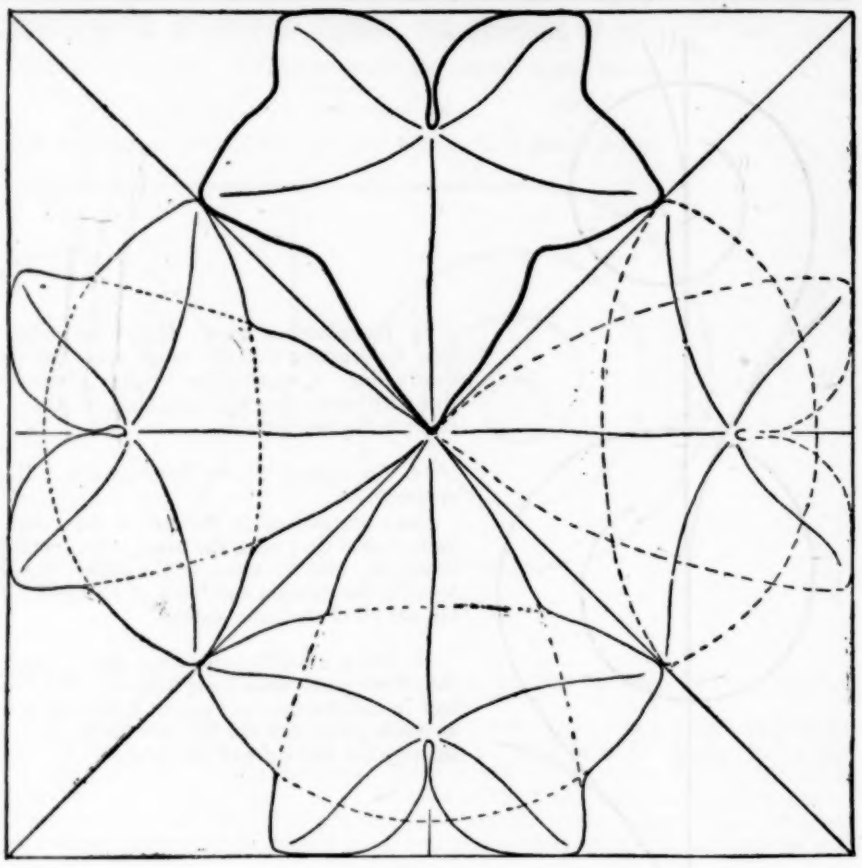


Fig. 10.

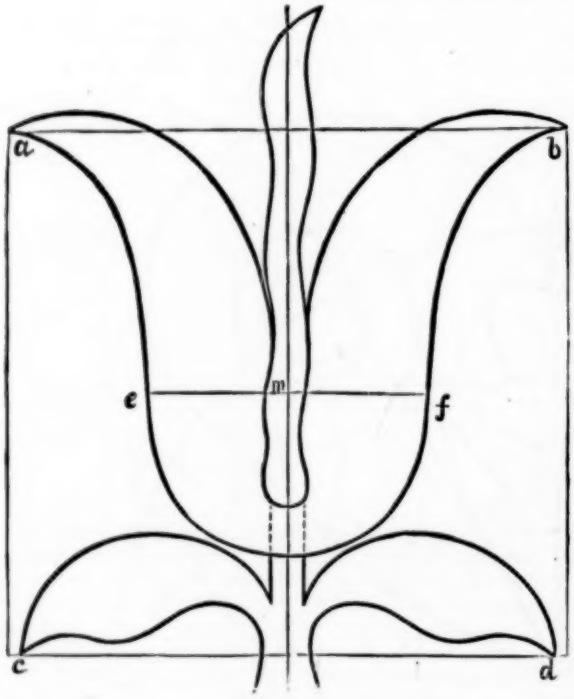
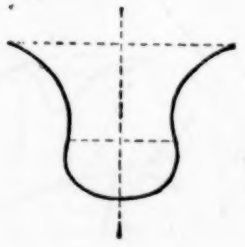


Fig. 11.

19. Examination copy. Symmetrical, except the centre spike, which should be drawn last. Be careful to get right proportions. The guiding lines form nearly a square, the cross lines being a little *longer* than the upright side lines; *c d* is a little less than *a b*; *e f* passes through *m*, the middle point between *a b* and *c d*, and reaches half-way across to give the places where the side curves change. Draw the two side curves first, forming an inverted bell shape; take great care to get the bottom part *round* without bulging out at the sides like this—



Copy the bottom leaves next, then the rest of the copy. Don't get the middle spike too thick.

(*To be continued.*)

DECORATIVE NEEDLEWORK.

BY MAY MORRIS.

Appliqué, or 'applied' work.—I include under this name every sort of embroidery which, being worked solidly on one material, is then cut out and laid down upon another, and secured by various ornamental stitches. This is rather a rough-and-ready definition, and requires amplification. Suppose, for instance, that a certain material is to be ornamented by having a group of flowers repeated over the surface at regular intervals. The group of flowers, or what not, is worked on some stout ground, such as holland or coarse linen; when finished so far, the work is cut out carefully, the scissors following round the edge of the work about a quarter of an inch or half an inch away, according to the size and nature of the work; the raw edges are usually turned in and run lightly round, and the work is then laid upon the ground material, which is ready stretched in a frame. When the spray is well in its place, care being taken that every leaf shall be duly laid, and no curve pulled the least out of shape, the whole design is edged with a gold thread, or a twist of silk or wool, or with a gimp or braid, according to the nature of the materials which are being dealt with. This method of work is, in fact, considerably modified by the materials employed. For a great bold wall-hanging in wools on serge we should not show the same nicety of finish that would be required for a delicate piece of work in fine silk and gold thread, to be laid on a choice bit of satin; in the former, the cut edges might be left,

Fig. 1.—Suitable for Appliqué.

and would be covered by the broad gimp or cord surrounding the design, whereas in the finer work the edges must be dexterously tucked away underneath, for the slim outline will not hide any unevenness here, and nothing looks so clumsy and ugly as a thick outline too heavy for the design. This turning-in of edges and sewing down very neatly is the most troublesome part of the work, and requires deft fingers; one has to be careful not to cut too near the work, nor too deep into the corners, but the broader the margin left the more tiresome it is to turn in neatly, especially if the design is small, or the least bit intricate. The design for such work should be of the simplest and broadest; leaves should have a simple outline, or if serrated the serrations can be shown by two or three little stitches within the outline. Compare, for instance, Fig. 1 and Fig. 2, in which two different forms of design are shown, the one, as I take it, suitable for this work, and the other unsuited to it. In Fig. 1 a conventionalised

Fig. 2.—Unsuitable for Appliqué

bud and leaf are drawn simply and even crudely, but all-sufficient for our purpose, and indeed it will be quite tiresome enough to turn in neatly the few points and corners that it presents. In Fig. 2, on the other hand, a daisy or chrysanthemum is drawn conventionalised also, with its pretty leaf deeply cut and serrated. There would be nothing elaborate or troublesome in this worked in some stitches; but for the form of work we are discussing now it would be well-nigh impossible, and I do not believe in trying to conquer impossibilities when there is a straight and simple way of doing what we want. Now, the very fact that broad and simple forms are a *sine quâ non* in this method, makes the work very well adapted for decoration that is intended to catch the eye at a distance, but for richer work to be seen near at hand, more elaboration in the finishing will be wanted. Flourishes and tendrils can be added in gold thread and silk, or a whole back-

ground pattern behind the solid *appliquéd* groups. This sort of 'tracery' seems to give a coherence to the heavier parts of the design, and is very helpful in enriching and lightening it.

Appliqué is not a stitch or series of stitches, but a certain method of work, irrespective of the stitches employed therein. But certain stitches are more adapted than others for working the groups and sprays to be applied. The more solid stitches will, of course, be used, and the various sorts of raised couching, especially gold couching, are perhaps the best for this purpose, and the stiffer worked the better. Botticelli, the Florentine artist, is said by his historian, Vasari, to have been specially fond of this work, and to have made designs for it; Vasari, indeed, said he invented it, but that I suspect of being a flight of the historian's imagination, which was lively at times, and not likely to err on the side of self-repression.

A simple form of applied work that is far from costly with regard to time and material, and yet effective, consists of cutting out shapes in coloured cloth or scraps of silk, and laying them directly on the material to be ornamented, and then connecting the whole with outlines and what veining and marking of leaf and so forth that the design seems to require for completion. Even this simple work must, I think, be put into an embroidery frame; it is so much easier to manipulate the work when both hands are at liberty.

Patchwork.—The laying down of one stuff on another for decorative purposes brings me to the mention of *patchwork*, a time-honoured kind of stitchery, familiar by name at least to all of us. More time-honoured, indeed, than one would think, for the patchwork quilts which form a charming and pathetic record of our grandmothers' girlhood and courtship, with the little scraps of brocade 'worn the first night I danced with your dear grandfather,' are but a survival of, or speaking more strictly, a variation from, a different sort of patchwork done in very far-off times in distant Egypt, that land where all the arts of life were flourishing exuberantly long before history even begins for us of the Western world. Patchwork is formed by *piecing together* bits of stuff of chosen texture and colour, cut in various shapes and neatly stitched together; if the shapes are at all complex, the fitting has to be most precisely and accurately managed, and forms the only really troublesome process of this sort of needlework. In its simple form such work is easy enough, but in the East it has been, and is still, elaborately carried out, with intricate design and beautiful colour. It is rather difficult to give a clear idea of this curious embroidery by mere description. You must imagine a *mosaic*, as it were, but instead of being made up of bits of marble or of coloured glass, this mosaic is formed of pieces of stuff of different colours, fitted together into certain ornamental shapes. Such patchwork distinctly comes into the category of things artistic, while the quilts and such-like of the last and the present centuries are only pretty pieces of neat stitchery, in which an elementary sense of geometric design and colour yet remains in the sometimes clever arrangement of the different scraps of dress stuff of which they are composed.

Quilting is done in different ways, but generally speaking, it consists of placing a thin layer of some soft yielding material, such as cotton-wool, between the ground to be worked on (be it thin silk, or fine cotton, or linen) and a thin lining; the design is then worked in firm stitches, taken right through to the reverse side. The result is a slight relief, which gives a rich and pretty effect. A cord is sometimes laid between the two surfaces, and stitched down either side, making a higher relief. This work can be varied considerably, but this description will, I think, be enough to enable the student to identify any different forms of quilting that she may come across among old or modern work.

(*To be continued.*)

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WELL-KNOWN TEACHERS AT WORK.

VI. — MR. T. J. MACNAMARA.

Head Master Avon Vale Boys' School, Bristol.

'Our Bristol authority on Elementary Education,' the *Bristol Mercury* called my subject the other day. I was curious to know the man who—being 'only a teacher' and not an amateur, you know—could earn such a title of 'honour in his own country.' So I ran down to Bristol and ruthlessly interviewed him.

I had to hunt for my prey; for the scene of his daily labours lies in a corner of the dingy, dilapidated, depressing, and 'slummy' regions of which so much of East Bristol is composed. The shambling, lack penny appearance of these surroundings is sharply contrasted with the substantial look of the Board school which takes up half one flank of the little street on which it abuts. But far more acute is the contrast between the school's exterior and much that meets the eye within.

Everywhere within one sees proof of thought and industry wisely and enthusiastically applied. Here the walls are bright with pictures; yonder the window-sill is gay with plants; the ledge beyond it serves as show-case for little models of mill-wheels, churches, and cottages, all neatly wrought in paper or card and tinted by the young hopefuls of the school. Here and there the children's handiwork is visible in crayon-drawings and maps, hung in places of honour as a reward for the painstaking that produced them. Here and there, too, are cases displaying materials and processes of manufactures, or 'curios' from other lands.

But the boys! Lean, shaggy, hungry-looking urchins, the bulk of them, with highly-ventilated elbows and aerated boots. Here one catches the gleam of a solitary clean white collar; but there, on the other hand, protrude a brace of bare feet. And yet, withal, the demeanour of the youngsters, quiet and attentive, speaks volumes for the training they receive at school.

All this has been photographing itself on my retina, while I sit inside the doorway awaiting my victim, as the corner spider waits to interview the giddy fly. Here he comes at last, though anything but insectile in appearance. A keen, alert face, index of a brain acute and ready; a broad-shouldered, wiry form, above the average height; a young man, devotee of the razor, who does not even look his lightly-carried thirty years; a quick, long gait; an unconventionality of garb; somewhat of the American accent, something of the

Milesian mirth ; a *tout ensemble* breathing of force and individuality, and a personality original and picturesque —such is the T. J. Macnamara whose name is 'writ large,' not only in his strong and cursive autograph, but upon the annals of our elementary education of to-day.

'Sorry to have kept you! Just examining the First Standard,' he explains. I, for my part, explain my errand, and follow him to the First Standard room.

'Here they are, seventy of them! Quite a dozen of them more than a dozen years old. Just took it into their heads to commence their classical education, you see,' says Mr. M. with a look at them half of fun, half of pity. '*Poor!* You may well say that! I don't know what we should do in winter were it not for the halfpenny dinners provided by the Children's Help Society. During the months that society is not at work the children who spend the dinner-hour in school dine off a scrap of dry crust, the most of them. Indeed, I have seen a youngster munching a raw turnip, as the sole item on the *menu*. During the last three months of last winter, I bought 2,167 halfpenny dinner tickets from the society. But as even a halfpenny toll bars the way to so many of the hungriest mouths, 1,516 of the tickets had to be distributed *gratis*. That is, roughly, an average of forty free dinners a day.'

T. J. Macnamara.

'I should think you find such luckless children uncommon bad material for a Government Examination,' said I.

'The condition of such children cries aloud for a very different programme of education than that in the Code. What they need is not drilling into marvellous accuracy of arithmetic or spelling, but a crusade against child-misery, against obscenity of thought and language, against lewdness. What the Government *should* say to the teacher in the slums is: "Go down there and missionarize. If you can't stuff hungry mouths with the three R's, we'll forgive you, so long as you shed about you ever so little 'sweetness and light.'"

'But, of course,' objected I, 'some "educational" results must needs be forthcoming.'

'So there would be in any case,' was the reply. 'But there, again, the Government makes the tremendous mistake of expecting all sorts and conditions of schools to reach the same standard. What it should endeavour to gauge in every case is *the amount of labour expended, and the educational value of that labour*. When, for instance, will it be admitted —and yet it is overwhelmingly true—that Fair results in one school may take a lot more getting than Excellent results in another? When will it be acknowledged that in good localities teacher and parents join hands to make for one end; whilst in such districts as East Bristol many of the parents are actually hostile to the teacher and his work—and would be equally hostile were the teacher an angel from Heaven? When will it be admitted that half the teachers are boring through granite at the same amount per foot as the other half are boring through chalk? When will it be seen——"

'But now,' I ventured to interrupt, 'upon what system do you work; for I take it you *do* work upon a system?'

'Certainly,' he replied, 'and simply this: The work in each subject is carefully dissected into nine parts. One part is performed each month, and at the end of the month examined. Each teacher is armed with a syllabus book recording on one page the month's work, on the other the results of my examination. By this system the year's work is thoroughly got through in nine months, leaving the last three months for revision. Thus assistants and pupil-teachers are not staggered at the magnitude of a year's work; nor can the youngest of them even go far wrong, for the monthly examination sets him straight.'

'Now let me show you my "home-made school apparatus." Here is the plan of the school, made of wood, with the playground realistically sanded. We stand this down upon the floor, *so*; and I am nearly through with a cardboard model of the school to fit on it exactly. Hanging above the plan is a *picture* of the school, on the same scale, worked on brown paper in coloured chalks. These, by the bye, may be made simply by dipping sticks of white chalk into coloured inks, and using them not quite dry. As the boys find places on the plan, so they have to find them in the picture. All the standards have brown paper pictures and maps, mainly for test purposes. Here is the Standard II. model of Geographical Terms; this, by the way, is the volcano.'

And before I could utter a word, a fusee was stuck into the miniature crater and lighted. The boys were all eyes for the realistic eruption, which left an aroma of 'Vesuvian,' if not of Vesuvius, in the room.

'This is Standard III. model of England; that is Ireland, for Standard IV.'

'How are they made?'

'Nothing simpler. Mix plaster of Paris into a thick paste with water in which size has been boiled, and the material will remain plastic long enough to allow you to model the outlines.'

And so we went on, from class to class. Each room contained cases of specimens for object lessons, and the upper standard room displayed a board setting forth the 'School Honours.' From this I gathered that every year these poorly-situated boys give no mean account of themselves in competitions for scholarships at secondary schools.

'Now will you tell something about your own history,' said I.

'Well, I was born in Montreal, and I regret that therefore I am not an Irishman by birth as well as by extraction. My father was a soldier, and up to ten years of age I got no better and no worse an education than is to be picked up by travelling about. Practically my only two books up to that time were grand old editions of *Gil Blas* and *Don Quixote*, teeming with woodcuts. Queer beginning, eh? But I knew the two by heart, almost. About '71, my friends settled in Exeter, and I soon after started along the pleasant paths of pedagogy as pupil-teacher at the St. Thomas's Board School. It was my good fortune to have been trained by Mr. George Robins, one of the best teachers that ever used chalk. I owe a good deal, too, to a former headmaster, Mr. W. T. Henley. In 1880 I went to the Borough Road College, and, like most "trained" men, I look back on my two years there as my happiest up to date. The year 1882 saw me for a short time an assistant in the Friend's School, Lancaster, and then at the Spring Grove Board School, Huddersfield. My chief pleasure in looking back to my work in Huddersfield is in the fact that it brought me into friendship with Richard Waddington, now of Bolton, the champion of the ten-year-old factory slave.' (Mr. Macnamara did not add that much of the recent victory against half-time unchristianity was due to his own energetic pen.) 'In 1884 I opened *this* school, with about 130 of the roughest samples of boy-material that ever teacher gave up in despair. My great success here, as you are pleased to term it, is mainly due to the splendid co-operation of my staff. No amount of smart organisation would be effected without *that*.'

'What about the Hart-Dyke Code, Mr. Macnamara?'

'A decided improvement on any previous attempt of the Department, but its good features are mainly due to the concessions drawn from the authorities by the Executive of the N.U.T. I've had two examinations under it. You see I adopt the individual system of classification, and consequently have a "synchronous" time-table. But such a system is only possible where there is a separate room and teacher for each class. I exercise the greatest freedom of classification, moving up and down after every three or four of my monthly examinations. I mainly endeavour to make regular attendance the *sine quâ non* for progress. Before long the Department will see the need for legislating in that direction. The eagerness of many parents to pack their children off to work at the earliest possible age is a factor that has never yet been properly utilised as a means of securing regular attendance.'

'And what about Free Education?' I asked. 'Your view, I believe, is that Free Education alone will not improve the attendance much?'

'Exactly. That small minority of parents who have given all the trouble in the past will continue to give all the trouble in the future, unless the State steps in and says—"Primary Education is going to cost eight millions a year. We will not allow you to waste your child's share of that benefit."'

I hastened to change the subject, for Mr. Macnamara looked dangerously like an hour's philippic against 'shamefully inefficient local authority,' 'soft-hearted magistrates,' etc.

'You have done a considerable amount of journalistic work in your time, I believe?' said I.

'Yes; I am an active contributor to most of the eductional journals, including THE PRACTICAL TEACHER, I am glad to say. Then during the past few months I have written articles for the *Pall Mall Gazette*, *Westminster Review*, and *Macmillan's Magazine*, etc. For a long time past I have been a regular contributor on matters educational to one of the leading provincial dailies. And several scholastic text-books, and a series of school songs have been issued from the press in my name. My first serious effort in this line—serious in more senses than one—was a pamphlet, published several years ago, denouncing "Payment by Results." It contained more adjectives than any book of its size I ever came across. Most of the copies, I believe, went to wrap butter up, so that it served its purpose,' said Mr. M. with a smile.

'You take a keen interest in the work of the N.U.T., I believe?'

'Yes; I am very proud to be a member of the Executive, and very anxious to see the Union cause progress in all directions. There is no disability under which teachers suffer that Union cannot remove. How in the name of all that's rational a teacher can venture to stay outside it I can't understand. Why, there is superannuation——'

AVON VALE BOYS' SCHOOL.—TIME TABLE.

Day	Standards	8.50 to 9	9 to 9.30	9.30 to 10.15	10.15 to 10.50	10.50 to 11	11 to 11.30	11.30 to 12	1.50 to 2	2 to 2.45	2.45 to 3.30	3.30 to 4	4 to 4.30
Monday	VII. VI.	Assemble in yard at 8.50. Hands! Faces! etc. Opening Hymn and Prayer at 9. Registers in Black	9 to 9.20—Scripture as per Syllabus; 9.20 to 9.30—Mental Arithmetic; Registers in Red, and closed before 10.	Arithmetic	Composition	Play in Yard; or Physical Exercises and Modulator Practice	Reading	Recitation	Assemble in yard as a.m. Registers in Black at 2; in Red, and closed before 2.30	Arithmetic	Composition	Maps	
	V.			Arithmetic	Composition		Reading	Recitation		Arithmetic	Composition	Maps	
	IV.			Arithmetic	Dictation		Reading	Recitation		Arithmetic	Dictation	Grammar	Geography
	III.			Arithmetic	Dictation		Reading	Recitation		Arithmetic	Dictation	Grammar	Geography
	II.			Arithmetic	Dictation		Reading	Recitation		Arithmetic	Dictation	Grammar	Geography
	I.			Arithmetic	Copy from Board		Reading	Recitation		Arithmetic	Copy from Books	Grammar	Geography
Tuesday	VII. VI.			Arithmetic	Composition		Grammar	Reading		Arithmetic	Geography	Drawing	
	V.			Arithmetic	Composition		Grammar	Reading		Arithmetic	Geography	Drawing	
	IV.			Arithmetic	Dictation		Grammar	Reading		Arithmetic	Geography	Drawing	
	III.			Arithmetic	Dictation		Grammar	Reading		Arithmetic	Geography	Drawing	
	II.			Arithmetic	Dictation		Grammar	Reading		Arithmetic	Geography	Drawing	
	I.			Arithmetic	Copy from Books		Grammar	Reading		Arithmetic	Geography	Drawing	
Wednesday	VII. VI.			Arithmetic	Reading		Grammar	Tonic Sol-fa		Reading	Composition	Geography	Recitation
	V.			Arithmetic	Reading		Grammar	Tonic Sol-fa		Reading	Word Forming	Geography	Recitation
	IV.			Arithmetic	Reading		Grammar	Tonic Sol-fa		Reading	Dictation	Geography	Recitation
	III.			Arithmetic	Reading		Grammar	Tonic Sol-fa		Reading	Dictation	Geography	Recitation
	II.			Arithmetic	Reading		Grammar	Tonic Sol-fa		Reading	Dictation	Geography	Recitation
	I.			Arithmetic	Reading		Grammar	Tonic Sol-fa		Reading	Copy from Board	Geography	Recitation
Thursday	VII. VI.			Arithmetic	Grammar		Geography	Reading		Arithmetic	Letter	Drawing	
	V.			Arithmetic	Grammar		Geography	Reading		Arithmetic	Letter	Drawing	
	IV.			Arithmetic	Grammar		Geography	Reading		Arithmetic	Dictation	Drawing	
	III.			Arithmetic	Grammar		Geography	Reading		Arithmetic	Dictation	Drawing	
	II.			Arithmetic	Grammar		Geography	Reading		Arithmetic	Dictation	Drawing	
	I.			Arithmetic	Grammar		Geography	Reading		Arithmetic	Copy from Books	Drawing	
Friday	VII. VI.			Arithmetic	Composition		Grammar	Copy Books		Arithmetic	Maps		Songs
	V.			Arithmetic	Composition		Grammar	Copy Books		Arithmetic	Maps		Songs
	IV.			Arithmetic	Dictation		Grammar	Copy Books		Arithmetic	Reading	Object Lesson	Songs
	III.			Arithmetic	Dictation		Grammar	Copy Books		Arithmetic	Reading	Object Lesson	Songs
	II.			Arithmetic	Dictation		Grammar	Copy Books		Arithmetic	Reading	Object Lesson	Songs
	I.			Arithmetic	Copy from Board		Grammar	Copy Books		Arithmetic	Reading	Object Lesson	Songs

Recreation ...	50 mins. = 3 per cent.	Writing, etc. ...	270 mins. = 15 per cent.	Drawing ... 120 mins. = 6·5 per cent.
Assembly, etc.	100 ,, = 5·6 ,,	Reading... ...	180 ,, = 13 ,,	Object Lesson ... 30 ,, = 1·6 ,,
Scripture ...	100 ,, = 5·6 ,,	Grammar ...	150 ,, = 8·6 ,,	Tonic Sol-fa ... 30 ,, = 1·6 ,,
Mental Arithmetic	50 ,, = 3 ,,	Geography ...	130 ,, = 7·4 ,,	Songs ... ... 30 ,, = 1·6 ,,
Arithmetic ...	405 ,, = 22 ,,	Maps	105 ,, = 5·5 ,,	Totals ... 1,750 mins. = 100 per cent.

ABSTRACT.

3 R's	= 50 per cent.
Class Subjects	= 35 ,,
Miscellaneous	= 15 ,,
Total ...	= 100 per cent.

(*Signed*) T. J. MACNAMARA, *31/10/90.*

Approved (*E.E.A. 1870*), C. H. B. ELLIOTT, H.M.I.S., *3/11/90.*

"Excuse me, but do you hold any other public position?'

'Yes; my fellow teachers were good enough to place me on the Bristol Educational Council. I am an ex-president of the local branch of the N.U.T. I am also on the Committees of the Bristol branch of the Home Reading Union and the Bristol Higher Education Society. I also find time to lecture twice a week to the Pupil Teachers' Centre, on School-method.'

'You have addressed a good many public meetings on educational topics, have you not?'

"Quite so. I have lectured to meetings of working men and others. Within the past few months I have lectured to various societies on "Free Schools," "The People and Their Schools," "Slipshod English," "Children's Witticisms," and so forth, in addition to making frequent trips into Devonshire as a missionary for the N.U.T.'

'I don't understand how you get half this work done,' I protested.

'Oh, it's the busy man that finds the time to be busier,' laughed Mr. M. as he bowed me out. And so, with hearty thanks and good wishes, I left this fine specimen of 'the Indefatigables.'

NEW DICTATION TESTS.

Suitable for 'Unseen Tests' in Reading also.

STANDARD IV.

No. 16.

The terrible gas explosion yesterday had some of the most alarming effects of an earthquake. The shock was felt all through the town, and the damage to person and property was of the most serious nature. Many persons were wounded, and one woman has died of her injuries. The explosion may almost be said to have blown out the centre of the town. The Crown Hotel, a large building, and a number of shops adjoining, have been utterly destroyed. The persons who were in the shop nearest to the hotel were the worst sufferers.

No. 17.

It does not matter what talent you have if you have not the talent London wants. You may be never so great a genius, but if you will not do the task London sets you, you and your genius may starve together. No doubt all this has been said a thousand times before; but it is so true, and so cruel, and so monstrous, that there is always an apology for saying it again.

No. 18.

The Zoological Gardens have been open now for so many years, that it is seldom that an animal is exhibited for the first time. An ostrich just arrived belongs to a species that has not been on view before. It is not very unlike the common ostrich, and it comes from the same country, Africa; but the naked skin about the neck is of a different colour. The new-comer is stowed away at present in a remote corner of the gardens.

No. 19.

Portable electric lamps are among the latest novelties of the opticians' shops. They are described as consisting of a battery enclosed in a wooden box, with a small lamp outside. By touching a small switch, the current is turned on, and the lamp emits a good light. The cost of these lamps is not excessive, and they are very suitable for domestic or office purposes. The present form is, however, open to improvement, one great fault being the risk of breaking the glass bulb.

No. 20.

People who live in towns imagine that November is a leafless month. That is a sheer delusion. Most of the foliage no doubt is on the ground by the middle of this month, but a goodly portion still lingers on the branches; even elms may be found still dressed in a delicate veil of gold in the broad open spaces. In the copse, the underwood retains a glorious remnant of its leafy beauty. There the brambles will keep their leaves green for weeks.

No. 21.

The captain states that he rushed on deck only half-dressed when the alarm was given, and he was carried down with the vessel. Coming to the surface, he seized hold of some wreckage, on which he floated for over nine hours, when, seeing some object in the distance, he swam towards it, and discovered it to be a Spanish barque, which had lost her topmast, and had her rigging towing overboard. He reports that all his crew must have foundered with the ship.

No. 22.

'A pair of shoes with india-rubber soles are a veritable comfort on board ship,' says a traveller who had been 'roughing it' on a long sea voyage. 'The captain, the mate, and the sailors all envied me mine, and declared that they would each and all invest in a pair of tennis shoes for their next voyage, for I could keep my footing on a slippery deck when the others could hardly stand.'

No. 23.

To search for insects in their several haunts—on the grass, in the woods, by the sides of ditches—furnishes an agreeable and instructive occupation. When a particular species is found and carried home in a box, and many sorts collected and preserved, there will be the means of arranging them upon a system. When walking in rural scenes, you may note the features of several seasons, and you will have sufficient variety to supply you with constant and pleasurable occupation.

No. 24.

The giraffe's great size, which enables it to feed upon lofty tree-boughs in its native African forests, makes it also a most conspicuous object to its enemies, of which the most dreaded are the lion and man. The most practised eye has failed to distinguish it from one of the dead and blasted trees which abound in the haunts of this animal. Reliable evidence assures us that lions have been known to gaze long and earnestly at a motionless giraffe, and, being unable to decide that it was not a tree, to turn and skulk away.

No. 25.

As showing the inability of some men to speak in public, a story is told of one of the bravest and most distinguished of our Indian officers who could never be induced to make a speech. Once, when a testimonial was raised for him, he declined to accept it, on the ground that if he did he must thank the donors publicly; and the difficulty had to be got over by quietly handing him the gift under a table.

No. 26.

An alarming accident happened at Portsmouth during a dense fog yesterday morning. H.M.S. *Crocodile*, on arriving with troops from Bombay, ran into and carried away part of the railway bridge connecting the line from the harbour station with the dockyard. The vessel was not damaged, nor did any personal injury result from the collision. A court of inquiry will at once assemble.

No. 27.

To some people, autumn brings with it a feeling of sadness; to them it is a reminder of death, and the end of all that has been beautiful; but, surely, when feeling thus, they can only be looking on the surface of things, and not up beyond, and so on and on, to the wonderful hidden meaning in all this earthly decay, which has something grand and beautiful about it, in its richness of colour and solemn quiet; for it must be that above all, autumn teaches us, as no book could, how everything must die, to live again at some future time in the fulness of order and perfection.

No. 28.

In one or other of these buildings the explosion had its origin. It is supposed to have been caused by the careless removal of a gas-meter, but at present the most serious subject of consideration is its deplorable effect. The hotel was not only blown to pieces; its ruins caught fire; and at one time the flames reached the spirit casks, where the landlord lay in danger of being roasted alive. His life, however, was happily saved.

No. 29.

Thank Heaven, the great paw would not go in the narrow crevice, and I held the cover fast by clinging to the inner part of the lock with all the strength of desperation. All he could do was to stretch out his tongue, and lick my fingers until they bled as if they had been scratched by a saw. And then, as he tasted blood, and heard her cry (for my poor darling was just as frightened as I was), his eagerness increased, and he began to utter piercing yells, which sent icy chills over me.

No. 30.

He stopped at the corner, gazed into the sky, scratched his chin and pulled his whiskers. Then he fumbled in his vest pocket, wrinkled his brow, and blew his nose with a manner more deliberate than the collector of a bad debt. Then he opened his mouth, tugged at his lower lip, muttered to himself, and fixed his eyes on the chimney-tops in a vacant, stony stare, that soon collected a crowd. He was a married man, trying to think what it was his wife had charged him to be sure to get.

No. 31.

A considerable time elapsed before the crew of fourteen was completed, during which period preparations were pushed forward to make a way for the boat to be taken to the beach, the proper slipway having been washed away. At last, all was ready to make a start, the names of the crew, which was a volunteer one composed chiefly of coastguards and fishermen, were called over, and, with a cry of 'Hang on to the ropes,' the boat was drawn out on her carriage.

No. 32.

An English nobleman, who had married a beautiful actress, once applied with much dignity for the arrears of her salary, and vowed that he would not stir till they were paid. 'My dear lord,' said the manager, 'this is too bad; you have taken from us the brightest jewel in the world, and you now quarrel with us for the little dust she has left behind her.' The nobleman immediately burst out laughing, and the debt was cancelled.

STANDARDS V. — VII.

No. 1.

After the accident the *Crocodile* passed on to the neighbouring jetty, and it was there found that she had sustained no damage whatever. Happily, too, no personal injury resulted from the disaster. The crash was heard on the shore, and many flocked to the beach, which during the day had been visited by many hundreds of persons. A court of inquiry will at once assemble, and upon its report the future proceedings will depend. Meanwhile it is stated that every precaution was taken by the pilot and the ship's officers, and the accident is attributed to the sudden fog and the currents.

No. 2.

A number of undergraduates belonging to a college at Oxford have incurred the displeasure of the authorities, and, as punishment, an order has been issued for them to be in, and remain within college, from seven o'clock in the evening for the remainder of the term. The friction dates back to the 5th of November, and arose out of the desire on the part of some of the young fellows to celebrate the anniversary of Gunpowder Plot by a display of fireworks and bonfire in the college quad. Some fireworks had been discharged when the Dean and Tutor presented themselves and ordered the amusement to be discontinued.

No. 3.

The undergraduates were not easily deprived of their pleasure, and for some time the Dean had to submit to a running fire of Roman candles and crackers, etc., flung from windows in different parts of the college. A large number of fireworks were confiscated and some taken from the men's rooms. This gave rise to a good deal of feeling, and when last week the team proved victorious in a football match it was determined at all hazards to celebrate the event by a bonfire and fireworks, the latter being brought into the college by various devices. The Dean was indignant at this rebellion, and directed the names to be taken of all participating in the jubilation.

No. 4.

While discussing the question whether Jews are wanting in art cultivation, we should bear in mind an 'important historical truth' which has escaped notice. It is that the severe interpretation of the Second Commandment has acted in the past as the most powerful obstacle to the pursuit of painting by Jews. It is only within the present Hebrew century that Jews have begun to emancipate their minds from what is called 'the hindering influence of that morbid interpretation'; but now there are a very considerable number of Jews and Jewesses devoting themselves to the study of painting and drawing.

No. 5.

Some day the economic loss to the nation through the misdoings of 'naughty boys' will be the subject of statistics. A plate-glass insurance society has given attention to the matter, for its profits are materially reduced by breakages consequent on the throwing of stones in the streets. It received £500 in premiums of insurance, but had to spend £226 in repairing damaged glass, no small part of which is ascribed to bad boys. On finding the proportion due, and applying it to the whole plate-glass system of the country, we get an imposing result by rule of three.

No. 6.

He then addressed the gathering in one of those delightfully graceful practical discourses which, avoiding all controversial matters, convey valuable lessons to all, and here especially the employer and workmen alike. His reminiscences of a long public career naturally in such a place included his successful efforts for the abolition of the duty on soap. The speech touched upon the relations between capital and labour, the established position of the Labour party, strikes (which, he said, are only adapted to a rude state of industrial life), workmen's faults, and co-operation.

No. 7.

It was stated a short time since that the authorities contemplated the closing of the convict establishment at Dartmoor. The reduction in the number of convicts sent there during the past few years was regarded as confirming this statement. The visiting director, who has just inspected the prison, has given orders for the reception of about two hundred convicts, and these are now being transferred in batches of about fifty. The work of the tailoring and shoemaking departments at Chatham is also to be transferred to Dartmoor, and the village shopkeepers are jubilant at the prospect of the revived trade which an influx of prison officers is sure to bring.

No. 8.

An unpleasant incident has occurred at Bangor Cathedral, ending in the resignation of the organist who has held the appointment upwards of twenty years. He was announced to assist in an instrumental recital to be given at the Presbyterian Church in aid of a promising young musician. Yesterday he received a letter from the Dean expressing strong disapproval of the cathedral organist taking part in musical performances in Dissenting chapels, and intimating his intention of bringing the matter before a special Chapter. The organist immediately replied that he would not have his privileges as a professional musician curtailed, and forwarded his resignation.

No. 9.

Liverpool, which is described as 'the first seaport in the world,' does nothing, it appears, in a public way for the encouragement of the study of geography or the promotion of exploration. At length, however, that great centre of commercial activity is awakening to its deficiencies in this regard. The Mayor has, at the request of an influential deputation, convened a meeting to be held in the Town Hall on Monday week, with the object of establishing a Geographical Society.

No. 10.

All the reports which reach this city from the famine-stricken districts repeat the same melancholy story of the heartrending sufferings undergone by the peasantry. A considerable number of the inhabitants sorely tried by the famine are emigrating, while the people from the provinces go in quest of work, or betake themselves to the ports on the Black Sea. Their efforts to obtain employment in these places generally prove unavailing, and, having spent all, they are finally sent back by the authorities to their native districts in a much worse condition than when they left. The chief sufferers are the Tartar population, who are abandoning their villages for good, after selling their homesteads for a few roubles.

No. 11.

Referring to his election, he said the position had been won for him by the united action of the North London District of the Unity, and demonstrated to the full the power of friendly society members if put to the test; and he thought it necessary for this power and influence to be shown, especially when Parliament had an inclination to interfere with the great friendly societies. By more than 50 years of practical work, in which they had given great assistance to members, in which they had considerably relieved the poor rates, and yet had accumulated a reserve capital of £7,000,000, the Manchester Unity of Oddfellows had shown the capacity to govern themselves.

No. 12.

When the time came to render it necessary for the friendly societies of Great Britain to maintain their rights, they would let the world know they were able to maintain their rights by the votes of the brethren of that order and other similar societies. They did not want to be legislated for without being consulted; and, moreover, they were determined not to have it. If Parliament wanted to put them on a footing with the great collecting societies, a great want of knowledge was shown, because, whilst the collecting

societies existed for the good of the directorate, and cost two-thirds the income in management expenses, not 10 per cent. of friendly societies' funds was so spent. He was proud of his association with the Oddfellows, and of the power and influence they had shown in the recent election.

No. 13.

At the conclusion of the case, the prosecutor played a mocking serenade on his organ in the street adjacent to the cells of the court in which the prisoner was confined. The magistrate forbade this refinement of cruelty as soon as he became aware of it, but not before the wretched captive had endured, without the possibility of retort, all the sarcasm that may lurk in 'The Bogey Man.' But for this galling infliction we should say that the biter had been not undeservedly bit. To be serenaded in a prison cell by the triumphant enemy who has put you there must be a punishment almost beyond the possibilities of human offence.

No. 14.

He afterwards proposed a vote of thanks to the Chairman; and, in responding to a similar compliment to himself said that in proposing and doing what he could to forward the repeal of the soap duty he was not acting an original part, but was a pupil of Cobden and of Peel. Secondly, he might say on behalf of his wife, whose name was joined to his own in the vote, that if he had ever done anything for the benefit of his fellow-creatures, he had been greatly encouraged and stimulated in that both by her advice and, still more, by her example.

No. 15.

The Albert University would exist solely for the benefit of the two colleges, and such others as they chose to recognise. It would not be in any sense a University for London, but merely a very small University dropped down in the midst of the metropolis—useless for the organisation of higher education, and worse than useless, for it would effectually block the way for a large and comprehensive scheme. Conceived in a narrow and exclusive spirit, the draft charter must be entirely remodelled before it can be received as even a first instalment of the great University which is to be.

No. 16.

It is impossible to approach an occasion of this kind without thinking of the vastness of the question which is opened when we ask ourselves what are the prospects of the Labour party in this country—a question that still carries into some minds doubt, apprehension, and alarm. I have looked for very nearly sixty years from a practical point of view, in connection with public duty, at the social movements of this country; and, although I would not wish to be too sanguine, and would wish, above all things, to avoid the offence of presumption, yet I do not hesitate to say that in my mind there is no cause for that apprehension, and that I look cheerfully forward both to the fortunes of the labouring man and to the relations which are being established between him and his employers.

No. 17.

A deputation of gentlemen from the National Temperance League waited upon their president yesterday afternoon, at London House, St. James's Square, and presented an address from the vice-presidents and committee congratulating him on the completion of his seventieth year. His lordship acknowledged the presentation, stating that he had derived great pleasure and comfort from his connection with the National Temperance League, which persistently, but with great moderation, advocated total abstinence as the best remedy for intemperance.

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NEW COMPOSITION STORIES.—STANDARD V.

Suitable for 'Unseen Tests' in Reading also.

No. 21.

THE TOOTH DRAWER.—There once lived a blacksmith who was renowned for his wisdom. The people flocked to consult him from the remotest villages. The art, however, in which he most excelled, was that of drawing teeth. And this is what he used to do. Having inspected the gums of the sufferer, he would exclaim, 'This tooth is worth nothing; it must come out!' Upon which he would take a piece of wire, one end of which he would fasten to the tooth; then, bidding the patient go on his knees with his back to the forge, he would attach the other end of the wire to a nail in the wall. During this process, a poker would be getting red hot in the fire. All being ready, 'Hold tight' he would cry, and seizing the red hot poker, thrust it within an inch of the nose of the patient, who, terrified out of his wits, would vehemently recoil, and often fall on his back. When he rose, he would see his tooth dangling at the end of the wire.

No. 22.

A TRICKY DOG.—An English officer who was once living in Paris, had often occasion to cross one of the bridges over the river Seine. One day, when passing a particular part of it, he got his boots dirtied by a poodle dog rubbing against them. He went to a shoe-black stationed near and got them cleaned. The same thing having occurred more than once, his curiosity was excited, and he watched the dog. He saw him go and roll himself in the mud of the river, and then watch for a person with well polished boots, against which he contrived to rub himself. Finding out that the shoe-black was the owner of the dog, the officer charged him with having taught the animal this method of bringing him customers. After some hesitation, the man confessed that he had trained the dog to perform the trick. Being much struck with the animal's sagacity the officer purchased him at a high price, and brought him with him on his return to England. Having tied up the animal some time, he released him, but after remaining with him a day or two it disappeared. A fortnight later the dog returned to Paris, and was found at his old quarters.

No. 23.

HOW TO USE A FLAIL.—A man had been persuaded to buy a flail, but his attempts to use it had been attended with more blows on his own person than on the grain. So thinking some other persons might be more skilful or more fortunate, he sat down on a bench by the roadside. Curiosity soon drew round him a crowd, among whom was a grey-headed old man, and when he saw that flail he looked ten years younger at once. 'I handled that for ten years,' he said, as he picked it up. 'Seems like old times to get hold of this hickory again.' He stepped out on one side to give the crowd an exhibition on the grass, and his success was great. At the second blow, however, the flail end hesitated in mid-air, wobbled about, and finally came down with a whack on the old man's head, making him see more stars than he would do on a winter's night. He dropped the flail with the remark that he was already ten minutes late in keeping an appointment, and he was rubbing his head as far as he could be seen.

No. 24.

COCK CROWING IN OTAHEITE.—The cocks in Otaheite used to be remarkable for being able to tell when a ship was approaching the island, long before the vessel was actually in sight. How they knew of the fact it is hard to say, but that they signalled it by all crowing together is declared to have been perfectly true. This occurred so often that it could not have been the result of mere chance, and their early information was so much to be relied upon, that the pilots always started off in their canoes to watch for the ship, as soon as they heard the cocks crow. Thus this noisy bird, which is justly regarded as a veritable nuisance in some countries, in others, becomes a boon and blessing to men.

No. 25.

'THEY NEVER TOUCH THE WIRES NOW.'—When the electric telegraph was first introduced into Chili, a stratagem was resorted to, to guard the posts and wires against damage on the part of the Indians. There were at the time between forty and fifty captive Indians in the Chilian camp. The general called them together, and pointing to the telegraph wire, said:—'Do you see those wires?' 'Yes, general.' 'I want you to remember not to go near or touch them, for if you do, your hands will be held and you will be unable to get away.' The Indians smiled incredulously. Seeing this, the general made them each in succession take hold of the wire at both ends of an electric battery in full operation, after which he exclaimed:—'I command you to let go the wire!' 'I can't; my hands are benumbed,' cried each Indian. The battery was then stopped. Not long after, the general restored them to liberty, giving them strict injunctions to keep the secret and not betray it to their countrymen. This had the desired effect, for, as might be expected, the experience was related in the strictest confidence to every man in the tribe, and the telegraph has ever since remained unmolested.

No. 26.

A HORSE'S ATTACHMENT TO A COMPANION.—Two Hanoverian horses had long served during the Peninsular War in a German brigade of artillery. They had assisted in drawing the same gun, and had been inseparable companions in many battles. One of them was at last killed; and after the engagement, the survivor was picketed as usual, and his food brought to him. He refused, however, to eat and was constantly turning round his head to look for

his companion, sometimes neighing as if to call him. All the care that was bestowed upon him was of no avail. He was surrounded by other horses, but he did not notice them; and he shortly afterwards died, not having once tasted food from the time his former associate was killed.

No. 27.

DANGER OF USING A 'LETTER WRITER.'—'Complete letter writers' are dangerous things to depend upon. Not many years ago a young man who wished to enter the employment of a certain manufacturer, pondered long over the proper and most effective way of addressing him. At last he found in a manual of somewhat wide circulation, a form for a letter which pleased him much. The letter bore the title, 'From a young man soliciting employment.' He copied it out, signed it with his name, and sent it to the gentleman. After some days of anxious waiting, he received a reply. He tore open the envelope and read, 'Turn over the leaf in your manual, and you will find my answer at the top of the opposite page.' He seized his book, and in the place indicated found a brief letter entitled, 'From an employer in reply to an application for employment, declining to engage applicant.' The gentleman was the possessor of a copy of the same book.

No. 28.

A DOG'S MEMORY.—The following remarkable story is told by the owner of an Irish water-spaniel. His master was out walking with him at the beginning of the long frost in 1885, which set in about the middle of January. He went on a frozen mill-dam, where, of course, the water was very deep, and accidentally dropped his snuff-box through a little round hole in the ice. The dog was dreadfully distressed at not being able to get it, but was obliged to go home with its owner, who thought no more about the matter. Two months afterwards, when the frost had gone, he and the dog passed by the same place. The animal paused opposite the spot where the box had disappeared, seeming to think intently for a minute, then plunged in, dived to the bottom, and returned with the snuff-box in his mouth.

No. 29.

A VALUABLE PICTURE ON BED CLOTHES.—Paul Veronese, like many other painters, was given to eccentric moods and odd habits. On one occasion he accepted the hospitality of a family at their beautiful country villa. He assumed great liberties during his visit, claiming absolute possession of his room, not allowing a person to enter. He would not even suffer the maid to make his bed. Finally, he slipped away without bidding the family 'good-bye.' On entering the room, the servant found the sheets of the bed missing, and at once reported that the painter must have stolen them. After careful search, a roll was found in a corner, which proved to be a magnificent picture of 'Alexander in the Tent of Darius.' It was painted on the missing sheets of the bed, and the artist had chosen this curious way of recompensing his hosts for their generous hospitality.

No. 30.

A CAT'S LONG JOURNEY.—A gentleman in Bangor had presented to him a cat with four kittens by a former friend living fourteen miles out in the country. They were placed in a close covered basket, inside of which was a blanket, in which they were wrapped, and the whole then covered with a thick rug. The basket was then brought in a waggon to Bangor. When they arrived, they were kept in a room in their new home, and carefully watched, fed and petted for some days, when they appeared to be quite contented. On the morning of the eighth day they were seen at their new home for the last time, and were missed soon after. The following day at noon the mother appeared at her old home with all her kittens. She did not return by road (the way she came), as she was seen by several persons going through the fields with a kitten in her mouth. Allowing thirty hours to have elapsed from the time she was last seen at her new home, and the time she was first seen at her old home, Mrs. Cat must have travelled a distance of 112 miles.

No 31.

A BIT OF OLD ENGLAND.—A gentleman, who has often dwelt upon the indifference of the young Australian towards 'the old country,' tells us a story, illustrating the widely different feeling of the original settler. When he started for Australia, the anchor of his vessel in Plymouth Sound brought up a quantity of Devon mud and ooze, which, in the course of a day or two, under a summer sun, baked into stiffish earth. Half by way of a sentimental joke, and half seriously, he took a cubic inch, or thereabouts, of this English soil, placed it in an envelope, and determined to carry this morsel of Old England with him on his travels. Many months afterwards, a farmer up country, whose guest the gentleman was, begged this bit of earth from him. 'You'll be going back there,' he said, 'and I never shall. I've been away from home for sixteen years, and I'd value that bit of Old England more than the Koh-i-noor.' 'When next I passed his way,' says the gentleman, 'I found that he had ridden sixty miles (out and home) to buy a little plush stand and a glass shade for the precious trifle.'

No. 32.

NAUGHTY POLLY.—A baker, who was suspected of selling light bread, was called upon one day by the inspector. The baker was ready for him, having been warned by a friend, and he politely told the officer that he had no bread left in his store, as the men were out delivering it through the city. Polly, who had been listening intently, put her head on one side and croaked out, 'Lots of bread under the counter,' whereupon the inspector on stepping inside, found all the light bread stowed carefully away. He, of course, at once summoned the baker, and after seizing the bread, left the store. Polly's master, frantic with rage, dragged her from the cage, and wringing her by the neck, opened the back door and threw her out. But Polly was not dead, and presently she rose up and looked about her. Spying a dead cat near her on the dust heap, she asked, 'I say, did you say anything about that bread, too?'

No. 33.

THE CREATION OF WOMAN.—A heathen prince once said to a Rabbi, 'Your God is a thief; he surprised Adam in his sleep and stole a rib from him.' The Rabbi's daughter overheard this, and whispered in her father's ear, asking permission to answer this singular statement. He gave his consent, when the girl stepped forward, and feigning terror and dismay, threw her arms aloft, and cried out, 'My liege, my liege!' 'What has happened?' asked the prince. 'A wicked theft has taken place,' replied the girl. 'A robber has crept secretly into our house and carried away a silver goblet, leaving a gold one in its place.' 'What an upright thief,' exclaimed the prince. 'Would that such robberies were of more frequent occurrence.' 'Behold then, sire, the kind of thief our Creator was; he stole a rib from Adam and gave him a beautiful wife instead.' 'Well said!' answered the prince.

No. 34.

CUNNING OF THE FOX.—A gentleman tells the following story of the cunning of the fox. A friend of mine (he says) was in the habit of shooting in a country where the ground was very wild. Two gullies led from the rocks to the lower ground. Near one of these channels the sportsman stationed himself in the hope of being able to shoot some hares. He had not been there long, when he observed a fox coming down the gulley, followed by another. After they had played together for a little time, one of the foxes concealed himself under a large stone which was at the bottom of the channel. The other returned to the rocks. He soon, however, came back, chasing a hare before him. As the hare was passing the stone where the first fox had concealed himself, he tried to seize her, but missed his aim. The other fox then came up, and finding that his prey had escaped through want of skill on the part of his associate, he fell upon him. They fought with so much animosity that my friend was able to destroy them both.

No. 35.

THE WITTY HAWKER.—An old bachelor who resided in Brixton, in order to prevent hawkers annoying him by knocking at his door to dispose of their wares, affixed to his door a label to this effect: 'Hawkers, beware! The inhabitants of this house never buy anything at the door.' He was dreadfully annoyed shortly after by a loud knocking at his parlour window, from which he saw two fellows with clothes-lines, mats, and pegs to sell. Throwing up the sash in considerable rage, he accosted them thus, 'Can you read?' 'Yes, master,' answered the hawker. 'Then don't you see a notice affixed to my knocker that I never buy anything at the door?' 'To be sure we do; so we thought we would make bold and try to do a little business at the parlour window.' The fellow's wit pacified the old bachelor who straightway made a purchase. Immediately afterwards, however, he sent for a painter, and had the following addition made to his announcement:—'Nor at the window, either.'

No. 36.

HOW TO OPEN AN OYSTER.—A crow found an oyster, and tried to open its shell with its beak, but all its efforts were useless. A raven, flying past, asked the crow what it was doing. On learning that it was puzzled how to open the oyster, the raven said that he knew of a plan. 'Pray tell me,' said the crow. 'With all my heart,' said the raven. 'Take the oyster, raise yourself in the air, and let it fall upon this rock.' The foolish crow followed this advice, but when the oyster was broken open, the raven seized and devoured it.

No. 37.

A REPROOF.—A young military officer, stationed at Newcastle, got involved in a quarrel with some of the lowest class in the public street. A gentleman passing by, was shocked at the bad language used, and stepping into the crowd thus addressed one of the leaders: 'Oh, John! what is this I hear; you only a poor collier boy, and swearing like any lord in the land? It may do very well for this gentleman (pointing to the officer) to swear as he pleases, but it is not for you nor the like of you.' Then turning to the officer, he said, 'You'll excuse the poor man for swearing, sir; he is an ignorant body, and knows no better.' The young officer slunk away in confusion unable to make any reply, but next day made it his business to wait upon the gentleman and thanked him sincerely for his well-timed reproof.

No. 38.

STORY OF A RUSSIAN WOMAN.—A Russian woman was once driving in her sledge with her children, when she suddenly found that she was pursued by a pack of wolves. Wild with terror, she whipped the horses and drove as hard as she could; but all in vain, for the wolves gained ground every moment. At last, to save her own life, she threw out first one child, and then another, until they were all gone. While the wolves stopped to eat the poor little things, she managed to escape. When she arrived at home and told her husband what she had done, he took an axe and struck off her head. 'A mother,' said he, 'who could sacrifice her children to save herself is not worthy to live.'

No. 39.

THE EXILE AND HIS SON.—A most heart-breaking meeting happened this summer between an aged exile and his son. The former was a convict engaged upon the construction of the new Siberian railway. One day, the old man was struck by the familiar look of the soldier, who, with loaded rifle, guarded his gang, and he made bold to ask him whence he came. To this question the soldier made no answer, being forbidden to enter into conversation with the convicts. The old man, however, grew more fidgety, ceased his work and fixed his piercing eyes on the soldier. At last, unable to control himself, he pronounced a name softly, calling out, 'My son, my dear son!' The soldier grew pale, compressed his lips and pulled himself together for a moment; the next, his emotion completely mastered him, his hands dropped to his sides, and he fell heavily to the ground. The old father threw himself on his body and covered him with kisses and tears. Some of the other soldiers tried to remove him by force, but he held the unconscious guard so tightly locked in his embrace, kissing him and muttering to himself, 'Yes, he knows me now,' that they were powerless to separate them. The doctor announced next day that the soldier had lost his reason and must be removed to a madhouse. When the convict was informed of this and was ordered to work as usual, he refused. Signs of insanity soon appeared, and he also had to be confined in a lunatic asylum.

No. 40.

A SOLEMN WARNING.—The following inscription is put up in the market place of Devises:—'The mayor and corporation avail themselves of this building to record an awful event which occurred in the market place in the year 1753. Ruth Pierce agreed with three other women to buy a sack of wheat, each paying her due proportion of the same. One of the women, in collecting the money, discovered a deficiency, and demanded of Ruth Pierce the sum that was wanting to make good the amount. Ruth protested that she had paid her share, and said she wished she might drop dead if she had not. She rashly repeated the awful wish—when, to the terror of the surrounding multitude, she instantly fell down and expired, having the money concealed in her hand.

COMMON-SENSE LESSONS IN EVERY DAY HOUSEWORK.

BY MRS. E. A. SHARMAN,
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Author of 'Family Cookery.'

WEEKLY CLEANING.

THERE are certain things in the home which it is usual to clean weekly, such, for instance, as cleaning fine china and glass, plate, polishing furniture, etc. If these duties fall to the lot of a schoolgirl to perform, they will need much patience, care, and method. Some of our most useful household utensils, particularly for the table, are made of china, as well as many pretty ornaments. These articles are more or less costly, and require great care in the cleaning and preservation of them, as most girls know. All careful work takes time to perform, and when cleaning or dusting china and glass, girls must not be in a hurry, for each article must be cleaned singly, which necessarily takes up time and patience. China and glass will not bear rough handling. If a girl is so unfortunate as to break anything while at work she should tell her mother immediately.

To clean Fine China.—If there is gold ornamentation upon the china to be washed never use soda in the water, or the gold will wear off after a few times washing. Dissolve half a teaspoonful of pearlash in hot water sufficient to cover the article to be washed. When the water has become lukewarm, put the teacup or ornament into it and wash gently with the hand. If an ornament has a raised surface of flowers, use a soft pastry brush to wash with, as it is impossible for the fingers to cleanse the leaves and flowers without breaking them, while the long, soft bristles of a pastry brush slip everywhere easily. If two ornaments or more are put into the water together they will fall against each other and chip, if they do not break. Be careful about the heat of the water used; sudden immersion in *hot* water causes china to crack. Use a wooden bowl to wash in, and drain upon a cloth which has been laid upon a tray or wooden board. Dry with a soft linen cloth after draining well, and use an old silk handkerchief to polish with. If any brush or rubber of a harsh nature be used the surface will be scratched, and its beauty spoilt. Water used too dirty makes china sticky. Wash the handles of cups carefully, or they may break off in your hand. A little common salt rubbed gently upon tea cups removes tea stains when they cannot be washed off. Never put china in the oven to keep food warm, the enamel will be cracked, and the article have a burnt brown appearance. If china has been burnt, common salt will clean it if the surface is quite plain, but if painted or gilded the roughness of the salt will wear off the ornamentation. Pearlash dissolved in the washing water removes grease and oiliness from china.

To wash Delicate Glass.—Make a little soapy lukewarm water, put into it a piece of soda as large as a nut, and when dissolved, the water is ready for use. Pour it into a wooden tub, and wash each glass article singly with your hand, turning it two or three times round in the water; rinse it in another tub of lukewarm water into which a few drops of washing blue has been put; drain carefully upon a cloth, so that the glass may not be chipped, and wipe with a soft old linen cloth, and polish until quite bright and spotless, with a silk handkerchief if possible, if not, another dry old linen cloth. Be careful how you handle glass, and remember that warm fingers even leave marks. Be careful to hold glass firm while washing and drying, as it quickly slips through the fingers when wet. The pattern of cut-glass sometimes needs to be scrubbed with a soft brush, and then wiped dry with a soft cloth and pointed wooden skewer; decanters and glass dishes are best cleaned in this manner. The frosted glass of lamp shades, globes, etc., is often scrubbed clean with a brush having stiff soft bristles; if too hard the glass would be scratched. Decanters or water-bottles can be

cleaned inside by tearing up soft paper into small pieces; put them into the bottles, half-fill with lukewarm water, and shake the bottle until clean, then rinse with cold water and drain well. Or cut up potatoes into fine slices, and use in the same manner as paper. Tea-leaves can be used also instead of paper or potatoes. The following is a good cement for mending broken glass or china:—Boil together half an ounce of isinglass, and a quarter of a pint of cold water until reduced to half a gill of liquid, add to it half the quantity of spirits of wine, mix well together, and use while warm. It should be very clear-looking.

To clean Plated Articles.—In former times none but rich people used plated or silver utensils; now nearly every household uses plated spoons and forks, cruet, and teapot, as well as many other pretty and useful articles. Plated goods ought to be washed first before beginning to clean them; this has a marvellous effect in making them shine brightly. Wash in hot soapy water, in which a little soda has been dissolved to remove all grease, rinse in cold, clean water, wipe dry quickly; draining makes plate dull; polish with a dry soft wash-leather. Clean in the above manner all articles used daily. For weekly, proceed in the same manner, but finish finally by rubbing with whitening or plate powder.

Plate requires a good deal of labour to keep clean and bright, but it is satisfactory work in the end if you do not grudge pains to secure a perfect result. After washing and drying the plate, lay a sheet of newspaper or an old cloth down upon the table before beginning to polish; put everything required to clean with upon it, or you will make a great mess upon the table and floor. An old tea-tray with its turned-up edge keeps everything together tidily. Put some finely powdered whitening in a saucer and some liquid ammonia in another saucer, dip a piece of old flannel into the ammonia, then when wetted, dip it into the whitening, and smear a thin coat of the mixture all over the article; place on one side for a few minutes, then rub with a soft cloth if at all wet, polishing with a dry soft leather. Do not lean upon the plate while cleaning it, or you will bend it; brush the engraved parts, and be careful not to scratch them. Forks must be dusted between the prongs, and all traces of whitening carefully wiped off before putting away. Knives, forks, spoons, etc., should have their own places in drawers, or a basket made with compartments, otherwise they will be spoiled by rubbing together. The electro-silver coating on articles that are always in use wears away in time, but is easily renewed, and the articles will look like new. Britannia metal can be cleaned with powdered rotten-stone and sweet oil mixed together into a paste, using a piece of flannel to rub with until the desired polish is produced. Wash in soapy water, and rinse in lukewarm water; dry well with a soft cloth, and put the articles in a warm place, to become thoroughly dry before polishing with a leather dipped in a little dry whitening. A teapot should be rinsed well in the inside to make sure no grit or paste is left round the inner edge of the lid, or fallen in during the operation. Spoons and forks are most unpleasant when they come to table with a flavour of the polishing materials clinging to them, or with white dust upon them. Some people prefer to use rouge for cleaning plate instead of whitening; if so, use three parts rouge with one part whitening mixed into a paste with ammonia. Fogs and gas tarnish plate when it is laid exposed to the air. Spots can be removed from plate by rubbing with a mixture of whisky and salt. Another way of cleaning plate is to put a large saucepan on the fire with about two quarts of water in it; shave into it two ounces of yellow soap, add a piece of soda the size of a walnut; put the articles to be cleaned into the saucepan, and let them boil for five or ten minutes, take them out into a bowl, pour boiling water over to rinse them. Rub them dry with a duster, and they will shine like new.

(*To be continued.*)

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CONVERSATIONAL DRAWING LESSONS FOR INFANTS.

BY MRS. E. MORTIMER,

Author of Practical Kindergarten Lessons for English Infant Schools; Lecturer on the Kindergarten at the Home and Colonial Training College.

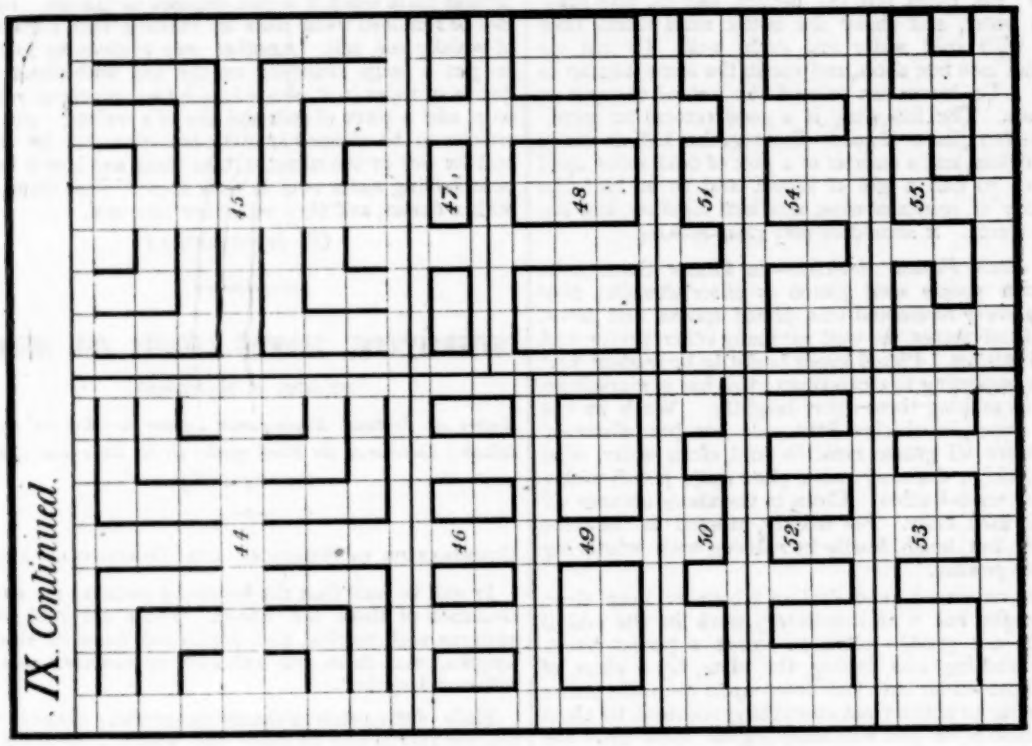
Combination of Vertical and Horizontal Lines.

It will be seen that the following patterns are a continuation of those last issued. There are still some patterns with vertical and horizontal lines of similar lengths, and these are followed by combinations of different lengths.

Each of the patterns should be carefully taught, the teacher taking care to make the lesson interesting in order to get the best possible work from the children. The patterns drawn should always be described. In many cases they are geometrical forms, and thus the children in drawing angles, squares, oblongs, etc., become familiar with these forms and learn to recognise them readily. The children during the lessons should also be taught all about them, *e.g.*, the square has four lines of equal length; it has four angles of the same size; each angle is a right angle, and the two vertical lines are perpendicular to the two horizontal lines; the oblong also has four lines, but only the opposite lines are equal to each other, one vertical line being equal to the other and the horizontal lines equal to each other; all its angles are right angles. The points of agreement (angles) and those of disagreement (lines) between the square and oblong should also be brought under the notice of the children.

The next series of patterns consists of vertical lines, four squares long, followed by vertical lines five squares long. These lines require more power and greater steadiness of hand. Each line must be produced by one stroke of the pencil, so that the child, when he starts, *must* know exactly where he is to stop. It is as well to mark the place by a very small dot. The teacher should first draw the line on the blackboard in the following way: She should put her chalk on the corner from which she intends to draw the line, then get the children to count four squares down, and after putting a dot at the bottom of the fourth square she should draw from the top to the dot.

The children should then draw one like it, after counting the squares and marking the end of the line. The children should at first work slowly with the


IX. Continued.
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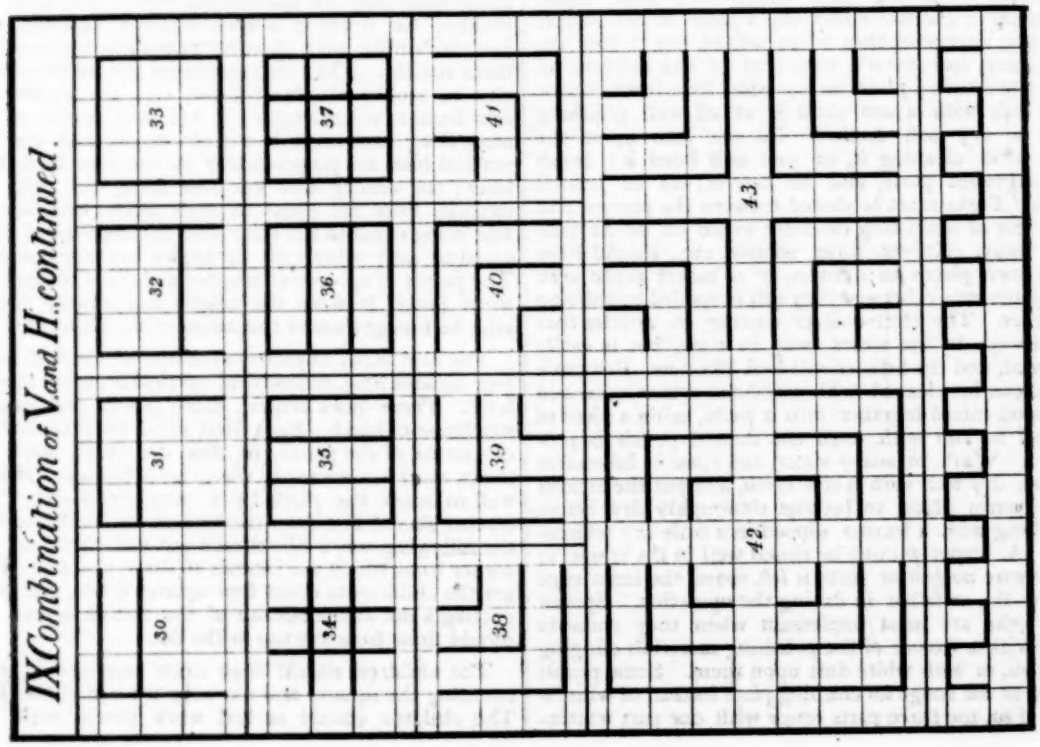
IX Combination of V. and H., continued.
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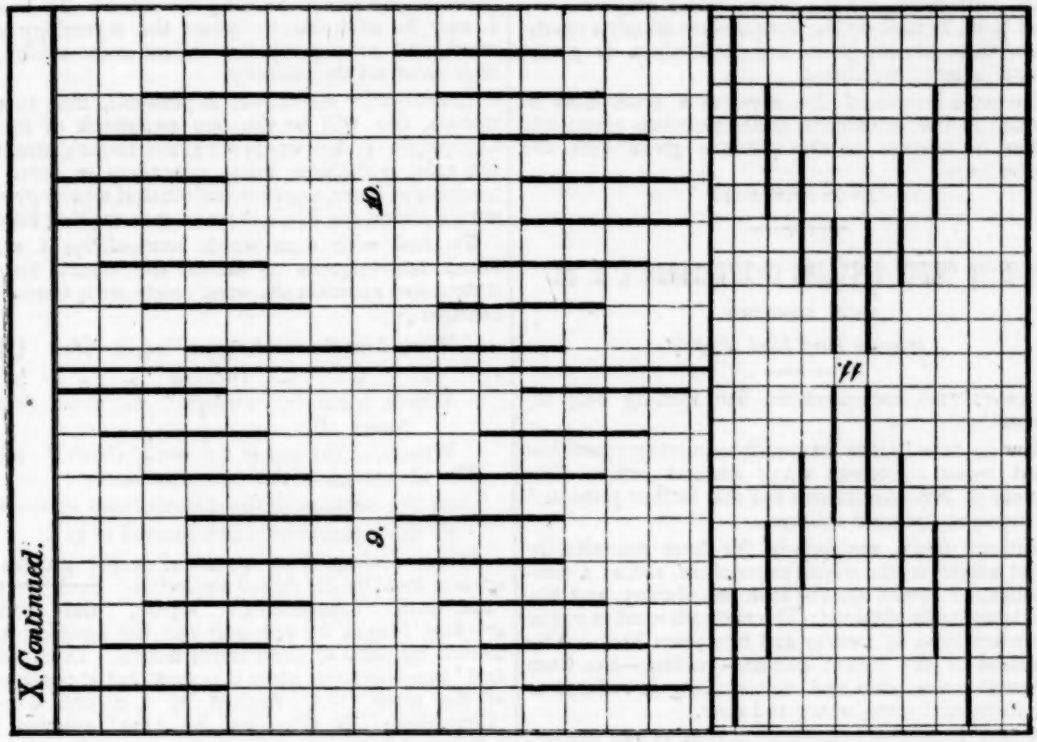
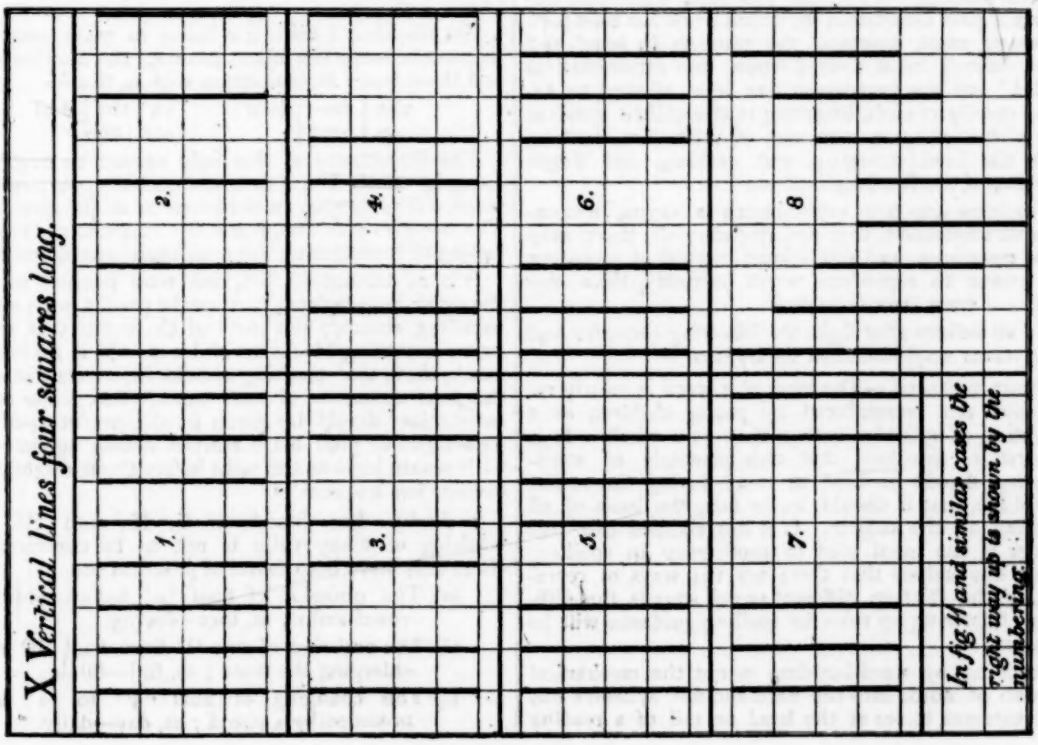

X. Continued.
9.
10.
11.


X. Vertical lines four squares long.
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2.
3.
4.
5.
6.
7.
8
In fig H and similar cases the right way up is shown by the numbering.

teacher, who will have to watch closely to see that the lines are each made with only one stroke of the pencil ; otherwise, either a patchy line is produced and a bad habit formed, or the exercises are simply a repetition of those already given, and no freedom or power of hand is being developed.

The extra length of line requires a dreat deal of practice, so that in addition to the exercises given the teacher is referred to the patterns given with the shorter lines.

(*To be continued.*)

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HOW TO TEACH SPELLING IN STANDARDS I. II. III.

BY B. GREGORY.

Neepsend Board School Sheffield.

'HAND-WRITING commendable, but spelling only indifferent.'

How to remedy this frequently occurring report has caused puzzled teachers many anxious hours. The outcome of their cogitations has still further perplexed the hopelessly puzzled children.

Without doubt, spelling is the least scientifically taught subject in the school curriculum, and as a consequence, its results are the least satisfactory, and the most laboriously obtained. The methods most in vogue to-day are those of twenty and fifty years back. The treatment of the parent subject—reading—has been improved times often, but still spelling is suffered to drag its painful steps, weary and slow.

Of late years the 'go-ahead' section of our inspectorate has turned its attention to word-building in infants' schools. When this has been vigorously enforced a good foundation for future work has been laid. In many cases, however, the teachers in boys' and girls' schools have looked upon the innovation as a 'fad,' and the foundation has been allowed to remain merely as such, lingering in the child's mind as one of the pleasant memories of infantdom, ranking with the bead stringing, mat making, and finger pricking of the Kindergarten era

Teachers are now experiencing a vague, uncomfortable impression, that perhaps, after all there may be a more easy, and still logical method of acquiring the power to reproduce words correctly, than *they* inherited from *their* Gamaliels.

To all seekers after light the following thoughts and suggestions may commend themselves :—

WORD-BUILDING.—The form of a word is mostly recognised and remembered by young children as a collection of syllables rather than as a whole. It is imperative, therefore, that this principle of word-building should be kept in mind during the earlier school life, that it should be, in fact, the basis of all teaching on the subject. It is not claimed that this system is the royal road to proficiency in spelling. When one realises that there are 104 ways of representing the thirteen different vowel sounds, the difficulty of drawing up rules for spelling guidance will be apparent.

Teaching by word-building is not the mechanical division of words into the hard and fast syllables one is accustomed to see at the head or tail of a reading exercise. What is the object in view ? The power on the part of the scholar to accurately reproduce the order of the letters forming the words. To this end it may be advisable to ignore the etymology of the word, and to regroup the letters more suitably for impression on the memory.

1. *Irregular words.*—It is probable, that to many readers, this will be the one paragraph of interest. Comparatively few words are found abiding strictly by the rule, multitudes being exceptions in part. The teaching of these, together with that of wholly irregular words, claims the lion's share of each spelling lesson.

To deal with such words successfully, it will be found advantageous to fix on the crucial letter or letters, and associate the word solely with these. For example—

What does the word 'gnat' begin with ? (*g*)
" " " 'ceiling' " " (*c*)
Which letter in 'straight' do many children omit ? (*i*)
What is at the end of the word 'climb'? (*b*)

The advantages of this treatment are—

(*a*) the isolation of the difficult letter in the word.
(*b*) the repeated attention secured to it.

When dealing with words of larger growth the scheme must he developed somewhat. Such words as 'cathedral,' 'chameleon,' 'scythe,' and 'sphere' are best taught by pointing out the *complete* words formed by parts of those under notice. Thus, 'cathedral' becomes easy, when it is seen that it is composed of the word 'the,' flanked by c-a and d-r-a-l. 'Chameleon' is simplified by 'me,' coupled with c-h-a and l-e-o-n. 'Scythe' is remembered as the word 'the' with s-c-y before it, and 'sphere' is 'here' and s-p.

For blackboard work it is better to make some distinction between the letters forming the familiar word and those found in connection with it, thus—

cha	me-	leon	ca	the	dral
sp	here		scy	the	

The importance of this help cannot be overrated. Lengthy words do not seem so dreadfully overpowering when one recognises an old friend as an integral part. The hopeless gaze disappears like magic as the revived feeling of conscious ability once again asserts itself.

It is an undoubted fact, that were teachers to give the requisite attention, they might predict with almost unfailing accuracy the parts of the words that would prove stumbling-blocks to children. Is it asking too much, then, that teaching should be concentrated on the *pons asinorum* of each word ? that some actual instruction should be given in the art of spelling? The sight of poor little mortals sitting aghast—and with reason too—at the tasks before them might then become less frequent

2. *Rules.*—For Standards I., II., and III., the teaching of many rules is not to be commended ; three only have been found of practical use.

(*a*) The omission of final 'e' before adding a vowel-suffix ; as, love—loving.
(*b*) The omission of one 'l' from final 'll' when enlarging the word ; as, full—fulfil.
(*c*) The changing of final 'y' to 'i' when preceded by a vowel ; as, day—daily.

In approaching these rules, inductive teaching will be preferable. Introduce in the ordinary lesson some half-a-dozen words amenable to the rule that is to be taught, and with opportune help it may be framed by the children themselves.

After a few lessons, words pressing home two rules simultaneously may be made use of; such as, 'pitiful,' 'dutiful,' 'beautiful.'

Association.—Bearing in mind that 'spelling-rules' are extremely limited in scope and value, it will be seen that each word—or, at least, each irregular word—must leave its own definite impression on the memory. Consequently, each brain-picture must have its own individual association, enabling the child to recall the formation-peculiarity which necessitated the isolation. These associations cannot be too varied or diversified. Children are mentally incapable of committing to memory, at one lesson, any great number of abstract words. A few threads of association, woven around, will secure the necessary reiteration, without the irritating and senseless 'parroting' that widely prevails.

To press home this point. Such a word as 'gnat' at once strikes the observant boy, and he will accurately spell it when required. But the *average* boy, and his still less gifted brother, are only too glad to be helped over it by the teacher. Instead of bestowing extra attention they find the memory too unpleasant for frequent recollection. A 'yarn,' such as the following, told simply, might be helpful to such children.

'One hot day a farmer was ploughing. The gnats troubled his horses exceedingly, and, on one occasion, instead of saying, "Gee! Captain," he burst out with "Gee! gnats." The gnats, at night, repaired to the fairy council, and complained of the insult they had received from a mortal. The fairy queen decided, however, that their conduct had been most provoking, and as a punishment, their name should be written as the farmer had called out. We therefore write 'gnats,' g-nats.'

The story will not be found superfluous, nor will it hinder the progress of the lesson. For weeks, and possibly months, the story will be associated with the word, and the end in view, viz., the teaching of the crucial letter, will have been attained.

The necessity for such teaching is only claimed when words of similar difficulty are being presented for the first time. The children will soon be able to spell the word and dispense with the then cumbersome association of the story.

Silent Letters.—To master these, the teacher may seemingly take the class into his confidence, and say that the really sensible way of spelling—for instance—the word 'wrinkled,' is 'r- i- n- k- l- e- d.' The person who put in the 'w' was fond of teasing children, and always tried to catch them in little traps like this. Emphasise by saying that hundreds of little folks all over the world are writing the word incorrectly that very day, while the cantankerous old man is laughing to see how nicely he has tricked them. However, now that the danger has been pointed out, it is expected that *they* will be wary.

Colloquial, confidential teaching of this character ensures the word-form being brought before the eye several successive times during the conversation. The impression thus made is far more permanent than would result from the mere 'spelling' of the word a score times.

The reason for this is clear. If the word be spelled orally a number of times, the mere jingle of the letters produces no lasting impression on the memory; while the attention given by the eye—even supposing the gaze not to wander during the whole time the word is under notice—ceases to be critical and intelligent after the first ten seconds. With what added interest, however, the word is viewed, when the—to children—absorbing story, which is being told, repeatedly directs attention to the one peculiarity of the word-form!

A 'word to the wise' is here due. Expressive and fluent teachers are advised that their strength *may* be their weakness. The arousing of interest is but a means to an end. Literary inventiveness is almost invaluable to teachers, but only when under control.

Spelling by the eye.—Little need be said in support of this. The old theory of oral spelling—except as a test—is gradually dying of neglect. The wonder is, that its life should have been so full of years. When confronted by an irregular or unusual word, the 'grown-up' writes down the word from the word-building knowledge possessed, and then judges of its correctness by the complete appearance. That this is the only safeguard against bad spelling, *we* know from bitter experience. Our teachers must have used the 'sight-test' for their *own* guidance, and why we were left groping for six or seven years is a painful mystery.

The use of script.—Each word, immediately previous to being written, must, by imagination, be seen—wholly or in part. The word-picture that has been projected on the retina—as it were—of the brain, may be accurately written by simply copying the order of the letters from the stored-up photograph.

Seeing, then, that knowledge of the forms of words is applied solely to their reproduction in *writing*, is it not reasonably preferable that the words should be presented to the children in the same characters? Yet thousands of teachers are content to teach (?) spelling by directing the children to learn the words at the head of a reading exercise. It is far more simple and effective to *write* the word, and then teach it as it will have to be remembered—in script.

Writing in the air.—By this is meant the writing in the air, with the finger, of the word it is desirous to learn. The children close their eyes, or look fixedly at one spot, striving to see in imagination the word they are called upon to spell. With very little practice this becomes easy, and the 'spelling' resolves itself into the 'over stroking' of the letters seen in the mind's eye.

It is not by this intended to supersede the repeated writing of difficult words, but rather as a valuable supplement. If all word-reproduction consisted of actual writing, the quality of the handwriting would seriously deteriorate. Should this ensue, accurate spelling would be considerably discounted. Writing in the air minimises this danger, while maintaining many of the advantages associated with actual writing.

To summarise: Teachers are advised to teach more as they practise, to analyse the words and give the children the benefit of their skill and experience, to remember that the most martinet discipline cannot command *intelligent* attention, and that more is achieved by the awakening of the *natural* interest than by the fixed and stupid gaze of fear.

LA JEUNE SIBÉRIENNE.

TRANSLATED BY PROFESSOR DARQUÉ—*(Author of 'Pupil Teachers' French Course.')*

La Jeune Sibérienne.

Cependant[206] une femme s'approcha pour l'interroger. Prascovie raconta l'affreuse nuit qu'elle avait passée dans le bois, d'autres paysans s'arrêtèrent pour l'entendre. Le starost[207] du village examina son passeport et déclara qu'il était en règle : alors la bonne femme attendrie lui offrit sa maison ; mais lorsque la voyageuse voulut se soulever, ses membres étaient tellement engourdis qu'on fut obligé de la soutenir. Elle avait perdu un de ses souliers, elle montra son pied nu et ses jambes enflées. Une pitié générale succéda bientôt aux indignes soupçons qui l'avaient fait[208] maltraiter. On la plaça sur un chariot ; et les mêmes enfants qui l'avaient insultée quelques moments auparavant s'empressèrent de la[209] traîner, et la conduisirent ainsi chez la villageoise, qui la reçut avec beaucoup d'amitié, et chez laquelle elle passa plusieurs jours. Pendant ce temps de repos, un paysan charitable lui fit une paire de bottines ; enfin, lorsqu'elle eut recouvré sa santé et ses forces, elle prit congé de la bonne femme, et continua son voyage, qu'elle poursuivit jusqu'à l'hiver, s'arrêtant plus ou moins dans différents villages, selon que la fatigue l'y obligeait et d'après l'accueil qu'elle recevait des habitants. Elle tâchait, pendant le séjour qu'elle y faisait, de se rendre utile, en balayant la maison, en lavant le linge ou en cousant pour ses hôtes. Elle ne contait son histoire que lorsqu'elle était déjà reçue et établie dans la maison. Elle avait remarqué que lorsqu'elle voulait se faire connaître au premier abord,[210] on ne la croyait pas et qu'on la prenait pour une aventurière. En effet, les hommes sont généralement disposés à se roidir,[211] lorsqu'ils aperçoivent qu'on veut les gagner ; il faut les toucher sans qu'ils s'en doutent, et ils accordent plus volontiers leur pitié que leur estime. Prascovie commençait donc par demander un peu de pain ; puis[212] elle parlait de la fatigue dont elle était accablée, pour obtenir l'hospitalité ; enfin, lorsqu'elle était établie chez ses hôtes, elle disait son nom et racontait son histoire. C'est[213] ainsi que, dans son pénible voyage, elle faisait peu à peu le cruel apprentissage du cœur humain.

Souvent des personnes qui l'avaient rejetée, la voyant s'éloigner en pleurant, la rappelaient et la traitaient fort bien. Des mendiants accoutumés aux refus y paraissent peu sensibles ; mais Prascovie, quoique placée par le sort dans une situation déplorable, n'avait point encore été, avant son voyage, dans le cas d'implorer[214] la pitié ; et, malgré toute sa force d'âme et sa résignation,

The Young Siberian.

In the meanwhile a woman drew near to question her. Prascovie related the frightful night she had spent in the wood ; other peasants stopped to listen to her. The starost of the village examined her passport and declared it was all right : then the good woman, who was moved, offered her her house ; but when the traveller wished to rise, her limbs were so benumbed that they were obliged to hold her up. She had lost one of her shoes, she showed her bare foot and swollen legs. A general pity soon succeeded the unjust suspicions which had caused her to be ill-treated. They put her on a cart ; and the same children who had insulted her a few moments before hastened to draw it, and led her thus to the house of the villager, who received her most kindly, and at whose house she stayed for several days. During that period of rest a charitable peasant made her a pair of boots ; at last, when she had recovered her health and strength, she took leave of the kind woman, and proceeded on her journey, which she continued till winter *came*, stopping more or less in different villages, according as fatigue compelled her to do so, and according to the reception she met with on the part of the inhabitants. She tried while she stayed with them to make herself useful by sweeping the house, washing the linen, or sewing for her hosts. She related her history only after she had been received and taken into the house. She had noticed that when she wished to make herself known at first, they did not believe her and they took her for an adventuress. Indeed, men are generally disposed to harden themselves when they perceive that one is bent on prevailing upon them ; it is necessary to move their hearts without their being aware of it, and they grant more willingly their pity than their esteem. Prascovie, therefore, began by asking for a little bread ; then she spoke of the fatigue by which she was overwhelmed, in order to obtain hospitality ; lastly, when she was settled in the houses of her hosts, she told her name and related her history. It was thus that, in her painful journey, she gradually got through the hard apprenticeship of the human heart.

Often persons who had refused her, seeing her go away in tears, called her back and treated her very kindly. Beggars, used to refusals, appear little affected by them ; but Prascovie, though placed by fate in a deplorable position, had not yet been, before her journey, obliged to ask for alms ; and, in spite of all her fortitude and resignation, she was deeply wounded by refusals, es-

Notes.

(206) *Cependant* is here used in its original sense ; the more general acceptation, 'however,' is a figurative one.

(207) *Starost*, mayor. There is one in every village, both in Russia and France ; in the latter country they are called *maires*.

(208) *Fait*. This participle never agrees when it is immediately followed by an infinitive, because it forms a compound verb with it, so that the preceding direct object, if any, is governed by both verbs.

(209) *La* refers to Prascovie, yet the translator has taken the liberty to substitute for it the pronoun referring to 'cart.'

(210) *Au premier abord*, on first coming near.

(211) *Roidir* ; also often written *raidir*.

(212) It is immaterial whether we say *puis* or *ensuite*, only we must bear in mind that *puis* never follows the verb, whereas *ensuite* may indifferently be placed before or after it.

(213) The French use the present instead of the past when the statement alluded to is still true at the moment the assertion is made.

(214) *Implorer*, literally 'to ask with tears.'

elle était navrée des refus, surtout lorsqu'ils provenaient de la mauvaise opinion que l'on prenait d'elle.

Le bon effet qu'avait produit, dans la circonstance dont nous venons de parler, l'exhibition de son passeport,[215] l'engagea dans la suite à le montrer lorsqu'elle désirait obtenir plus de faveur de ses hôtes : elle y était qualifiée de fille de capitaine, ce qui lui fut utile en plusieurs occasions. Cependant elle avouait que le malheur d'être repoussée lui était arrivé rarement, tandis que les traitements d'humanité et de bienveillance qu'elle avait éprouvés étaient innombrables : 'On s'imagine, disait-elle dans la suite, que mon voyage a été bien désastreux, parce que je ne raconte que les peines et les embarras dans lesquels je me suis trouvée, et que je ne dis rien des bons gîtes[216] que j'ai rencontrés, et dont personne ne désire savoir l'histoire.'

Parmi les situations pénibles de son voyage, il en[217] est une dans laquelle la jeune fille crut sa vie menacée, et qui mérite d'être connue pour sa singularité.

Elle marchait un soir le long des maisons d'un village, pour chercher un logement, lorsqu'un paysan qui venait de lui refuser très-durement l'hospitalité la[218] suivit et la rappela. C'était[219] un homme âgé, de très-mauvaise mine.[220] Prascovie hésita si[221] elle accepterait son offre, et se laissa cependant conduire chez lui, craignant de ne pas obtenir un autre gîte. Elle ne trouva dans l'isba qu'une femme âgée, et[222] dont l'aspect était encore plus sinistre que celui de son conducteur. Ce dernier ferma soigneusement la porte et poussa les guichets[223] des fenêtres. En la recevant dans leur maison, ces deux personnes lui firent peu d'accueil[224] ; elles avaient un air si étrange, que Prascovie éprouvait une certaine crainte et se repentait de s'être arrêtée chez elles. On la fit asseoir. L'isba n'était éclairé que par des esquilles de sapin enflammées, plantées dans un trou de la muraille, et qu'on remplaçait lorsqu'elles étaient consumées. À la clarté lugubre de cette flamme, lorsqu'elle se hasardait à lever les yeux, elle voyait ceux de ses hôtes fixés sur elle. Enfin, après quelques minutes de silence : 'D'où venez-vous ? lui demanda la vieille.

— Je viens d'Ischim, et je vais à Pétersbourg.

— Oh ! oh ! vous avez donc beaucoup d'argent pour entreprendre un si grand voyage ?

— Il ne me reste que quatre-vingts kopecks en cuivre,[225] répondit la voyageuse intimidée.

— Tu mens ! s'écria la vieille ; oui, tu mens ! On ne se met point en route pour aller si loin, avec si peu d'argent !' La jeune fille avait beau protester[226] que c'était là tout son avoir, on ne la croyait pas. La femme ricanait avec son mari. 'De Tobolsk à Pétersbourg avec quatre-vingts kopecks, disait-elle ; c'est probable, vraiment !' La malheureuse fille, outragée et tremblante, retenait

pecially when they were due to the bad opinion people formed of her.

The good effect which the production of her passport had produced in the circumstance of which we have just spoken, induced her subsequently to show it when she wished to obtain more favour from her hosts : she was there described as the daughter of a captain, which proved useful to her on several occasions. Yet she admitted that the misfortune of being repulsed had seldom happened to her, whereas the instances on which she had been treated with humanity and benevolence were innumerable : 'One conceives, she said afterwards, that my journey was disastrous, because I relate only the hardships and troubles I have gone through, and I say nothing of the good receptions I met with, and the history of which no one wishes to know.'

Among the painful situations of her journey, there is one in which the young girl thought her life threatened, and which deserves to be known on account of its peculiarity.

She was walking one evening alongside the houses of a village, to look for a lodging, when a peasant who had just very harshly refused her hospitality followed and called her back. He was an old man, very ill-looking. Prascovie hesitated *as to* whether she should accept his offer, and yet allowed herself to be taken to his house, in the fear she should not obtain another lodging. She found in the isba only an old woman, whose countenance was still more ominous than that of her conductor. The latter carefully closed the door and put up the window shutters. While taking her into their house, those two persons gave her a cool reception ; they looked so strange, that Prascovie felt a certain dread and repented having stopped in their house. They made her sit down. The isba was only lighted by burning fir-chips, stuck in a hole in the wall, and which were replaced by others when they were burnt down. By the gloomy light of that flame, when she ventured to raise her eyes, she saw those of her hosts fixed upon her. At last, after a silence of a few minutes : 'Where do you come from ? the old woman asked her.

— I come from Ischim, and I am going to St. Petersburg.

— Oh ! oh ! you then have a great deal of money to undertake so long a journey ?

— I have only eighty kopecks in copper left me, replied the intimidated traveller.

— You lie ! exclaimed the old woman ; yes, you lie. People do not set out to go so far, with so little money !' It was in vain the young girl protested that was all she had, they did not believe her. The woman was tittering with her husband. 'From Tobolsk to St. Petersburg with eighty kopecks, she said ; it is *very* likely, indeed !' The unhappy girl, outraged and trembling

(215) Two reasons can here be assigned for the place of the subject after its verb : (1) The subordinate begins with the relative pronoun *que—qu'avait produit*, etc. ; (2) It was desirable that *passeport* should be brought as near as possible to the personal pronoun *le—le montrer—* which refers to it.

(216) *Gîte*, home, lodging. This word is seldom used in reference to persons.

(217) *Il en est une*. The verb *être* is occasionally used impersonally instead of *y avoir*, either to avoid the repetition of the latter or through fondness of archaic expressions on the part of writers or speakers.

(218) Personal pronouns governed by two or more verbs must be repeated with every one of them, except when the governing verb is a past participle used without any auxiliary : *il l'a dit et redit cent fois*.

(219) *C'était*. The French, in such expressions, invariably use the demonstrative *ce*, and not the personal pronoun, as in English.

(220) *Mine* used in reference to persons mostly alludes to health, but, in reference to things, it merely denotes appearance.

(221) *Si*, meaning 'if,' is never followed by either the future, conditional, or the subjunctive ; but *si*, 'whether,' may precede either a future or a conditional, though not a subjunctive.

(222) *Et* is here added for the sake of emphasis.

(223) *Guichet* is now only used in reference to the small shutters of wickets, such as those found in railway booking-offices.

(224) *Lui firent peu d'accueil* is not an expression to be imitated ; we would rather say, *lui firent un pauvre accueil*.

(225) *Il ne me reste plus que*, literally 'there no longer remain to me but.'

(226) *Avoir beau* followed by an infinitive implies that it is useless to do, or be, what is expressed by that infinitive. This idiom is supposed to be an abbreviation of the (ironical) expression *avoir beau jeu*, to have a fine game.

ses larmes, et priait Dieu tout bas[227] de la secourir. On lui donna cependant quelques pommes de terre, et dès qu'elle les eut mangées, son hôtesse lui conseilla de s'aller coucher. Prascovie, qui commençait fortement à soupçonner ses hôtes d'être des voleurs, aurait volontiers donné le reste de son argent pour être délivrée de leurs mains. Elle se déshabilla en partie avant de monter sur le poêle[228] où elle devait passer la nuit, laissant en bas, à leur portée,[229] ses poches et son sac, afin de leur donner la facilité de compter son argent et pour s'épargner la honte d'être fouillée.

Dès qu'ils la crurent endormie, ils commencèrent leurs recherches. Prascovie écoutait avec anxiété leur conversation. 'Elle a encore de l'argent sur elle, disaient-ils, elle a sûrement des assignations.[230] J'ai vu, ajouta la vieille, un cordon passé à son cou, auquel pend un petit sac ; c'est là où est l'argent.' C'était un petit sac de toile cirée, contenant son passeport, qu'elle ne quittait jamais. Ils se mirent à parler plus bas et les mots qu'elle entendait de temps en temps n'étaient pas faits pour la rassurer. 'Personne ne l'a vue entrer chez nous, disaient les misérables ; on ne se doute pas même qu'elle soit dans le village.' Ils parlèrent encore plus bas. Après quelques instants de silence, et lorsque son imagination lui peignait les plus grands malheurs, la jeune fille vit tout à coup paraître[231] auprès d'elle la tête de l'horrible vieille qui grimpait sur le poêle. Tout son sang se glaça dans ses veines. Elle la conjura de lui laisser la vie, l'assurant de nouveau qu'elle n'avait point d'argent ; mais l'inexorable visiteuse, sans lui répondre, se mit à chercher dans ses habits, dans ses bottines, qu'elle lui fit ôter. L'homme apporta de la lumière : on examina le sac du passeport, on lui fit ouvrir les mains ; enfin le vieux couple, voyant ses recherches inutiles, descendit, et laissa notre voyageuse plus morte que vive.

Cette scène effrayante, et plus encore la crainte de la voir se renouveler,[232] la tinrent longtemps éveillée. Cependant, lorsqu'elle reconnut à[233] leur respiration bruyante que ses hôtes s'étaient endormis, elle se tranquillisa peu à peu, et, la fatigue l'emportant sur la frayeur, elle s'endormit elle-même profondément. Il était grand jour lorsque la vieille la réveilla. Elle descendit du poêle, et fut tout étonnée de lui trouver,[234] ainsi qu'à son mari, un air plus naturel et plus affable. Elle voulait partir ; ils la retinrent pour lui donner à manger. La vieille en fit aussitôt les préparatifs avec beaucoup plus d'empressement que la veille. Elle prit la fourche et retira du poêle le pot au stchi,[235] dont elle lui servit une bonne portion[236] ; pendant ce temps le mari soulevait[237] une trappe du plancher sous lequel était le seau du kvas,[238] et lui en servit une pleine cruche. Un peu rassurée par ce bon traitement, elle répondit avec sincérité à leurs questions, et raconta une partie

restrained her tears, and silently prayed to God to help her. They however gave her some potatoes, and, as soon as she had eaten them, her hostess advised her to go to bed. Prascovie, who was beginning to strongly suspect her hosts of being thieves, would have given willingly the remainder of her money to be delivered from their hands. She partly undressed before climbing upon the stove on which she was to spend the night, leaving below, within their reach, her pockets and her bag, in order to afford them the opportunity to count her money and to spare herself the shame of being searched.

As soon as they thought her asleep, they began their search. Prascovie was anxiously listening to their conversation. 'She has still some money upon her, they said, she certainly has some paper money. I saw, said the old woman, a string hung round her neck, from which hangs a small bag ; that is where her money is.' It was a little bag made of oil-cloth, containing her passport, which never left her. They began to talk in a lower tone, and the words that she heard from time to time were not calculated to reassure her. 'No one has seen her enter our house, said the wretches ; no one even suspects her presence in the village.' They spoke in a still lower tone. After a few moments of silence, and when her imagination pictured to her the greatest misfortunes, the young girl saw all at once close to her the head of the horrid old woman who was climbing on the stove. All her blood froze in her veins. She entreated her to spare her life, assuring her again that she had no money ; but the inexorable visitor, without answering her, began to search her clothes, and her boots, which she made her take off. The man appeared with a light : they examined the passport, they made her open her hands ; at last the old couple, seeing their search useless, went down, and left our traveller more dead than alive.

This frightful scene, and still more the dread of seeing it renewed, kept her long awake. However, when she found out by their noisy breathing that her hosts were asleep, she gradually grew easy, and, fatigue getting the better of fright, she herself went fast asleep. It was broad daylight when the old woman woke her up. She came down from the stove, and was quite astonished to find that she, as well as her husband, had a more natural and friendly look. She wished to set out ; they detained her to give her something to eat. The old woman at once got everything ready with much more earnestness than the previous evening. She took the fork and took out of the oven the stchi pot, a plateful of which she gave her. In the meanwhile the husband was raising a trap in the floor under which was the kvas jug, and gave her a mugful. A little reassured by this kind treatment, she truthfully answered their questions, and related a part of her story. They looked *as though they took* an interest in

(227) *Tout bas*, literally 'in a low voice.' *Parler tout bas*, to whisper.

(228) Poor Russian peasants having no beds generally sleep on their unusually large stoves.

(229) *A la portée de l'enfance*, within the comprehension of youth.

(230) *Assignations*, paper money (formerly *assignats*). Now *assignation* is a legal term meaning 'summons.' It is occasionally used as a synonym of *rendez-vous*, appointment (to meet anyone).

(231) *Paraître* is here a mere redundant word, introduced only to give more roundness to the period.

(232) Notice this additional instance of the reflective form of verbs being rendered by the passive in English.

(233) Notice also *l'homme au masque de fer*, the man with the iron mask.

(234) Literally 'to find on her.'

(235) *Stchi*, a Russian dish, made of fermented cabbage — sourcrout — and salt meat.

(236) *Portion*, used in reference to food, points out the quantity allotted to each person.

(237) *Soulever*, literally 'to lift up.'

(238) *Kvas* is a kind of beer brewed with rye, and not with barley as in western and central Europe.

de son histoire. Ils eurent l'air[239] d'y prendre intérêt : et, voulant justifier leur conduite précédente, ils l'assurèrent qu'ils n'avaient voulu savoir si elle avait de l'argent que parce qu'ils l'avaient mal à propos soupçonnée d'être une voleuse, mais qu'elle pourrait voir, en comptant sa petite somme, qu'ils étaient bien loin eux-mêmes d'être des voleurs. Enfin Prascovie prit congé d'eux, ne sachant trop[240] si elle leur devait des remercîments, mais se trouvant fort heureuse d'être hors de la maison.

it; and wishing to justify their previous behaviour, they assured her they wanted to know whether she had money only because they had unjustly suspected her of being a thief, but that she would be able to see, by counting her money, that they were themselves far from being thieves. At last Prascovie took leave of them, wondering whether she owed them thanks, but feeling very happy to be out of their house.

(*To be continued.*)

([239]) *Avoir l'air* is here synonymous with *paraître*, to appear.

([240]) *Ne sachant trop*, literally 'not knowing too well.'

STANDARD PROBLEMS.—STEP BY STEP.

With Blackboard Examples.

BY JOHN PENDLEBURY.

Introductory Remarks.—'Of variety in Problems there is no end.' We maintain, however, that these endless varieties are simply changes rung upon a few general rules as a foundation. In this succession of papers we propose to deal with this foundation in all its phases and details, and also more particularly to overhaul and expound the many contortions and twistings and by-paths of these general truths and principles. In recent years the study of problems has become indeed a study, and both for its 'codal' value, its intrinsic value as a mental discipline, and its important and varied usefulness in after life, this study is of the utmost importance to all teachers, especially in the elementary schools of the country. Having made a special study of problems for some years, we propose to embody the results of our observations in a few practical remarks, hints, and examples for blackboard use and demonstration. We shall endeavour to make these papers as comprehensive as possible, and we do not hesitate confidently to assert that any teacher who carefully *leads* his class through the Government examples given in each standard need have no fear as to each child successfully working the problem set before him on the inspection day

General Hints for All the Standards.—The ground work for all problematic arithmetic must be a thorough drill in Mental Arithmetic. This mental work should be commenced immediately the class enters its new standard, and should be so arranged as to be preparatory to the class of problem which they will have to work later. If ten minutes be spent by the teacher daily in putting short, sharp questions to the scholars, and insisting upon an answer from everyone to every question, the best preparation will be given. The questions *must* at first be so simple that every child, even the most backward, can mentally follow the reasoning and logical steps. The children must be encouraged to *think* for themselves. This is the *most vital* point in teaching problems, especially in Standards II. and III. Every teacher I have met, when speaking of problems, invariably remarks, 'I cannot get scholars to think.' One chief cause of this is that the children are so young, and their mental faculties are only in the budding stages, and in the most forward are only imperfectly developed. A truly wonderful result may be obtained if this ten minutes drill is persisted in, if the children are encouraged to think, if they are guided and taught to reason logically step by step, leading slowly but surely from the simple to the most difficult tests. Another great difficulty is to get the children to put down on slate or paper the result of their reasoning. Nothing will obviate this so much as constant practice on the part of the scholar individually, following upon the same lines as the models worked by the teacher on the board before them all collectively. We shall now proceed to give carefully selected and typical models, together with teaching hints and other examples for the separate standards, II. to VII. inclusive, and we shall endeavour to embrace every possible variety of the usual variations from the foundation rules and principles. In every standard teachers should insist upon well-made figures, neatness, accuracy, and style.

STANDARD II.

Problems Bearing on (a) Addition.—1. John has 256 marbles, James has 189, and Tom has 568. How many have they together? Before this is written *in full* upon the blackboard the teacher asks the class mental problems such as the following: 7 + 3 + 10? Ans. 20; 19 + 5 + 11? 35; Boy wins 20 marbles on Monday and 9 on Tuesday, how many total? 29; Girl gets 20 apples one day, 10 the next, and 5 the next, how many has she? 35. Teacher now asks the children how they obtain the answer in each case; by addition. Let a sharp boy come to the board and attempt to put down the last mental exercise in proper form for working, thus:—

20 First Day
10 Second „
5 Third „

35 Total apples.

Now ask why they added. The answer will be readily given by some, if not all, that to find the *total* number we must add what she gets on one day to the next day, and so on until we have included all she got. Now write Problem 1. upon the blackboard. Let the class read it aloud together. It will be easy now to get them to see that if we are to find the total all three boys have, we must add each separate boy's share to all the others. Teacher now puts down the three lines of figures parallel with the other worked ex. above, thus:—

256—John
189—James
568—Tom

1,013 Total marbles.—Ans.

How do we find the total of a set of numbers? Add them together. Other exercises exactly similar, except in the *wording*, must now be worked before them, preceded by mental exercises similar to the above, and then the children must be allowed to work several individually, still keeping to the same type of sum exactly. Bring the dull ones up to the front under your eye, and encourage them to think and put forth effort to catch up with the others. The quick ones may be somewhat neglected here, for they will in all probability give no difficulty in keeping pace with the steps, and special attention and supervision must be devoted to the so-called 'dunces,' or they will be a drag upon the progress all through to the examination. 2. Will has 163 nuts, and Sam has three times as many. How many have they both together? This is but another form of the above (1). Give mental exercises, thus: A boy had 2 tops, and his brother had twice as many. How many had his brother? 4. How many times the number 2 had the brother? Twice. How many had both together? 4 + 2 = 6. How many twos had both boys? 3. Then how do we find total? By putting 2 down three times and adding, thus:—

2—boy
2 } —brother
2 }

6 Total for both.—Ans.

Give similar problems, just as simple, and let girl come and put one down. Let the above remain on as a sample. Now proceed thus:—How many nuts has Will? 163. Put down 163 on blackboard. How many times 163 has Sam? 3. Then under Will's 163 we must put Sam's share, which is three times 163. Put it down three times, thus making four times in all. Now to find total we must do what? Add their shares together, thus:—

163—Will
163 }
163 } —Sam
163 }

652 Total for both.—Ans.

Give others for them to work, exactly similar. They will now be well able to work all forms of problematic addition. We append a few examples actually given by Her Majesty's Inspectors. These

may be multiplied indefinitely by a little judicious altering of words and numbers.

Typical Problems (*a*) *Addition.*—1. In a regiment there are three companies. The first contains 67 men, the second 89 men, the third as many as the other two together. Besides these there are 56 bandsmen and 20 drummers. How many men are there in the regiment? Ans. 388 men *Note.*—The method of obtaining the number in the third company must be explained, mental exercises (easy) given, and it must be put down thus:—

67—first
89—second
67 } —third
89 }
56—bandsmen
20—drummers
—
388. Total.

2. A school contains five standards. In Standard II. there are 75 children; in Standard III., 69; Standard, IV., 48; Standard V., 36; Standard VI., 23 boys and 5 girls. How many are there in the whole school? Ans. 256 scholars. *Note.*—Show the class that the number in Standard VI. can be put down in two separate lines, 23 and 5, or they can be added mentally and 28 substituted for both numbers. The most backward will see the reason for this. 3. Tom has 95 sheep in one pen, 63 in another, and 26 in another. I have twice as many. How many have I? Ans. 368 sheep. *Note.*—Ask, what will have to be known before we can tell how many I have? Ans. The number Tom has. How must we find that number? Add up the separate numbers. 184. Now, how many times 184 have I? Two? Then I have 184 + 184 = 368 Ans. It may here be left to the scholars to see if any could tell how many I have, without adding, after finding Tom's total. The sharpest will answer multiply by 2; the boys here getting their first notion that multiplication is a shorter form of addition. Of course the detailed explanation of this comes later. 4. How many boots do 56 boys and 29 girls want altogether? Ans. 170. *Note.*—This is somewhat similar to the last problem. Ask what they will want to find first? Ans. How many children there are. Add boys and girls together 56 + 29 = 85 children. How many boots does each require? Two. Then how many times 85 shall we want? Two. Put down twice

85
85
—
170 Total boots.

add up, or put down 85 × 2; multiply by 2 = 170.

Problems bearing on (*b*) *Subtraction.*—Example for blackboard. A girl had 567 oranges. She gave 199 away. How many had she left? Explanation of method of procedure is similar to that given under Addition. *Mental Exercises:* Take 10 from 26, how many left? 16. Boy had 25 marbles, lost 15, how many left? 10. 50 sheep in a field, 20 got lost, how many left? 30. Girl had 24 oranges, lost 4, how many left? What do we do with those lost, sold, given, stolen, or dead? Take them away. Let boy put this latter upon blackboard, thus:—

24 oranges
4 lost
—
20 left.—Ans.

Side by side with this teacher works example given above, questioning all the time, and showing analogy between the one just worked and this one. Proceed thus:—

567 oranges held.
199 „ given away.
—
368 „ left.

All subtraction problems are similar to above, and present little difficulty.

Typical Problems (*b*) *Subtraction.*—1. A town has 29,065 inhabitants and another has 5,978. How many has one more than the other? Ans. 23,087. *Note.*—The teacher must explain carefully that this amounts really to *finding the difference* between the number of people in the two towns; and when we have to find the difference we *always subtract*. 2. How many must be *added* to 3,596 to make 5,006? Ans. 1,410. *Note.*—Give mental exercises, such as, how many must be added to 6 to make 10? 4. Do this till it dawns upon the class that the question really means, how many is 6 short of 10?—that is, what is the difference between 6 and 10? And this can only be got by subtraction. 3. What must be subtracted from 15,093 to leave 9,564? Ans. 5,529. (Explain as in 2.) 4. Out of a school of 973 children, 59 are absent through sickness. How many are present? Ans. 914. (*Note.*—Typical, but should present no difficulty at this stage.)

Problems bearing on (*c*) *Multiplication.*—Example for blackboard. A mile contains 1,760 yards. How many yards in 59 miles? Ans. 103,840 yards. *Mental Exercises:* 3 boys have each 5 tops; how many together? Three fives = 15 Ans. 7 girls have 3d. each, how many pennies together? 7 times 3 pence = 7 threes = 21. A thorough drill in the Multiplication Table *must* be given here. 5 boys have each 100 nuts, how many together? Let a boy put down 100 on the board. Now what have 5 boys? 5 times what one boy has, that is, 5 times 100 =

100 one boy
5
—
500 five boys.—Ans.

Then take above example similarly. One mile has 1,760 yards, then 59 miles must have 59 times the number of yards in them than one mile has. Therefore, 59 miles have 1,760 × 59 =

1,760 yards in one mile
59
—
15840
8800
—
103,840 yards in 59 miles.—Ans.

(*N.B.*—We ought to add that teachers must not take it for granted that their scholars know too much, and they must not rest content with working only *one* example of each kind on the blackboard but *many, modelled* upon those given above. These remarks apply to every standard, and at every step in that standard.)

Typical Problems (*c*) *Multiplication.*—1. If a horse costs 57 pounds what will be the worth of 450 such horses? Ans. 25,650 pounds. 2. If a boy has three miles to go to school, how far would he travel in going *to* and *from* school in 300 days? Ans. 1,800 miles. *Note.*—Ask how many miles the boy travelled in a day? Ans. 6 miles. They will easily see then that in 300 days he must travel 300 times 6 miles = 1,800 miles. 3. If a case of eggs contains 575 eggs, how many eggs will there be in 45 cases. Ans. 25,875 eggs. 4. If a boy earns 15 shillings a week, how much will that be in a year? Ans. = 52 times (weeks) 15s. = 780 shillings.

Problems bearing on (*d*) *Division. Blackboard Example.*—7 villages contain 2,380 people. How many is that in each? *Mental Exercise:* I have 30 apples, how many for each of 10 boys? 3. In 4 bags there are 36 oranges, how many in each? 9. Give many of these, varied. Lead them to see that in the latter example the 36 oranges are to be distributed, or portioned, or *divided* among the 4 bags, so that each gets *one-fourth*—that is, 36 must be divided by 4. Thus

bags 4)36 oranges
—
9 „ in each bag.

Take example (1.) above. In the seven villages there are 2,380 people; therefore, in one village there is what part of them? One seventh? How do you find half, third, quarter, seventh? By dividing by 2, 3, 4, or 7. Then

villages 7)2,380 people in 7 villages
—
340 „ „ 1 village.—Ans.

Typical Problems (*d*) *Division.*—1. 11 men are together worth ten thousand and ten pounds. What is each man worth if all are equal? Ans. 910 pounds. *Note.*—Insist on children recognising the fact that *each* man must have a *part* of the *whole*, and as there are 11 of them, each will want *one-eleventh*. 2. Divide 71,600 bricks into eight equal heaps. How many in each? Ans. 8,950. (Similar reasoning as in 1.) 3. How many dozens are there in 74,196? Ans. 6,183 dozens. *Note.*—Draw from the scholars that it really means we are to divide the number into groups of 12; or it means find the twelfth part, which *must* be by division. 4. How many buckets, each containing 9 gallons, can be filled from a well holding 5,706 gallons? Ans. 634 gallons. (Reason as in 3.) *Note.*—Division sums commencing with the words '*how often* can a certain number be *taken* or *subtracted* from another,' or '*how many times* is one number *contained* in another,' require special mention here. Teacher must employ the concrete here in some such way as the following, and afterwards give mental exercises of a similar nature. Take a dozen slates, employ a boy to hold them; then bring out another boy and set him to take away, say three slates at a time, the others counting. Repeat this with books, pencils, rulers, etc., using other numbers; and thus the children will see that they are actually finding out 'how often one may be taken from another,' or 'how many times one number is contained in another.' It will be easy to go now to the final step that to do this we must divide them into groups; and this is simple division.

General Problems, including the foregoing Four Rules.—These are

so numerous in variety that we cannot give detailed explanations of the method of solution of each, but content ourselves with indicating the steps. Each one is intended solely to serve as a model; and it will be necessary to work many other similar examples before the children can work them alone. A = addition, S = subtraction, M = multiplication, and D = division. Easy mental exercises, exactly similar, must precede each, and a similar mode of assisting their reasoning must be followed as explained in detail above.

1. A piece of cloth measures 250 yds. If 18 yds. were spoiled and 127 sold, how many yards would be left? 105 yds. (A. and S.) 2. There are 1,274 books on 4 shelves. On each of the first three there 318 books. How many on the fourth shelf? 320. (M. *or* A. and S.) 3. In a bag are 10,000 nuts; of these 5,010 are sold and 3,200 are bad; divide the rest equally among 10 boys. 179. (A. S. and D.) 4. A postman delivers 945 letters in one street and 7 times as many in another. How many does he deliver altogether? 7,560. (M. and A.) 5. A boy has 60 marbles; he loses 19 and wins 37; how many has he at last? 78. (S. and A.) 6. In one room there are 27 girls and 52 boys, and in another 17 girls and 36 boys. How many more children are there in one room than the other? 26. (A. A. S.) 7. Out of a box of 906 plums, 9 boys receive 90 each? How many were left? 96. (M. and S.) 8. 17 boys and 17 girls each receive 17 apples. How many are left out of 1,700? 1,122. (A. M. S.) 9. How many pennies must I have to give 48 to each of 9 boys and 17 girls? 1,248. (A. and M.)

—o—

MODEL ANSWERS TO CERTIFICATE QUESTIONS—1891.

GRAMMAR AND COMPOSITION.

FIRST YEAR.

MALE CANDIDATES.

Composition.

Write a short essay on one of the following subjects:—

1. Thrift.

2. A man's character as shown in his behaviour to other men.

3. The various applications of Electricity in modern times.

The word THRIFT is derived from a root meaning *to grasp* or *seize*. Next it signified *retention;* now it means economical and prudent retention—carefulness in management of means—frugality, which degenerates neither into prodigality on the one hand, nor miserliness on the other.

This explanation is almost sufficient for the right understanding of the benefits resulting from its practice. It brings in its train foresight and self-denial, temperance and independence. The joy of progress is continually present, and the fear of want recedes further and further until it sinks below the horizon of apprehension.

With it comes the power to indulge our benevolence, and from it departs the pang of inability to relieve distress. The respect of one's fellows, born partly of material progress and partly of moral development, increases ever more and more; and the accumulation of wealth affords a means of benefiting by holding out to labour the opportunity of remunerative employment.

Thrift as aforesaid is utterly distinct from useless hoarding, but lest it should degenerate into vice, it is well for the careful man to be systematically benevolent.

Grammar.

1. Parse the words in italics in the following passages, and give rules for parsing in each case:—

A doubtful throne is *ice* on summer seas.
Ye come from Arthur's court. Victor his men
Report him. Yea, but ye; think ye, this *king*
So many *those*, that hate him, and so strong,
So few his *knights*, *however brave* they *be*,
Hath body enow to hold his foemen down?

I remember in the beginning of Queen Elizabeth's time an Irish *rebel*, *condemned*, *put up* a petition to the Deputy that he might be hanged in a withe and not in a halter, because it had been so used with *former* rebels. There *be* monks in Russia that will sit a whole *night* in a vessel of water, *till* they be engaged with hard ice.

I. (*a*) *ice*—com. noun, sing., 3rd, neut., nom., subj. after the verb *is*.

(1) (*A copulative verb takes the same case after it as before it.*)

king—com. noun, sing., 3rd, masc., nom., subj. to *hath*.

(2) (*The subject of a verb is in the nominative case.*)

those—demonst. pron., plural, 3rd, com., nom., either absolute or subj. to [*are*].

knights—com. noun, plural, 3rd, masc., nom., either absolute or subj. to [*are*].

however—adverb of degree, mod. *brave*.

(3) (*Adverbs modify adjectives.*)

brave—adject. of quality, positive, qual. *they* predicatively.

(4) (*Adjectives are used predicatively in connection with copulative verbs.*

be—verb, copulative, subjunct., present, plural, 3rd, agree with its subj. *they*.

(5) (*A verb agrees with its subject in number and person.*)

(*b*) *rebel*—com. noun, sing., 3rd, mas., obj. governed by *remember*

(6) (*Trans. verbs in the act. v. govern nouns in the objective case.*)

condemned—verb, reg., trans., pass., past partic., qual. *rebel*.

(7) (*Participles qualify nouns or their equivalents.*)

put—verb, irreg., trans., act., infin., partic., qual. *rebel*.

up—prep. used as an adv., mod. *put*.

(8) (*Adverbs modify verbs.*)

former—ad., comp., qual. *rebels*.

be—verb, irreg., substantive, indic., present, plural, 3rd, agree with *monks* (Rule 5).

night—com. noun. sing., 3rd, neut., object. mod. *sit*.

(9) (*The objective case measuring duration is adverbial.*)

till—prep. gov. the noun sentence "*they be engaged*, etc."

(10) (*Prep. govern nouns or their equivalents.*)

N.B.—*Till* may be accounted a conj., or temporal conjunction.

(Answer (*a*) or (*b*), not both of them).

4. Explain the terms Regular, Irregular, Strong, Weak, as applied to verbs; and classify the following verbs as Regular or Irregular, and as Strong or Weak—fall, fell, fly, flee, flow, hurt, raise, rise, sit, set, sell, spend.

IV. (*a*) There is now little difference between Regular and Weak Verbs and between Irregular and Strong Verbs. Nowadays a Verb which forms its past tense by adding *-t*, *-d*, or *-ed* to the present is called a Regular or Weak Verb; and those which form their past tense in any other way are denominated Irregular or Strong Verbs. Indeed, Mason goes so far as to say that the use of the terms *Weak* and *Strong* is now mere affectation.

But originally Strong Verbs were those that formed their Past Tense by reduplication, or repeating the root of the word. Gradually this reduplication wore down until the original root vowel and the root vowel (repeated in the reduplication) became consecutive. Next they coalesced, giving a fuller and broader sound to the root vowel.

Those Verbs, even of the Strong Conjunction, that underwent different modifications from this standard process, were Irregular Strong Verbs, and those of the ordinary class were Regular Strong Verbs.

Similarly the originally Weak Verbs were those that formed their Past Tense by adding *did* to the present, so that I did love = I love did = I loved. Variants were denominated Irregular. Thus, in ages gone by, there were Irregular and Regular Weak Verbs.

Good instances of Irregular Weak Verbs are *cast*, *cast*, *cast*, *lend*, *lent*, *lend*, etc.

(*b*)	*Strong.*	*Weak.*
fall	(Anglo-Saxon *fealle*, *feoll*, *feallen*).	fell (to cut down a tree).
fly	(„ „ *fleoge*, *fleah*, *flogen*).	flow (originally strong). flee (*shortening* of root vowel).
rise	(„ „ *rise*, *ras*, *risen*).	in Past Tense. hurt (suffix has disappeared).
sit	(„ „ *sitte*, *saet*, *seten*).	raise. set (suffix has disappeared). sell (the present tense has changed). spend (suffix has disappeared).

N.B.—*The above portion of the question cannot be answered without going beyond the syllabus.*

Irregular.	*Regular.*
fall.	fell.
fly.	flow.
rise.	raise.
sit.	
flee.	
hurt.	
set.	
sell.	
spend.	

5. Comment on—heathen horde, Excalibur, mage Merlin, Tintagil, samite, vert and azure, great lords from Rome.

V. (*a*) *Heathen hordes* called Saracens in *Merlin* and by Malory. In reality they were the heathen of the North Sea, Norsemen or Saxons.

(*b*) *Excalibur* was the name of Arthur's fairy sword, huge and cross-hilted, given to the King by the Lady of the Lake, and rendered to her again at Arthur's command by Sir Bedivere. The name probably means '*Cut steel.*'

(*c*) *Mage Merlin* = wizard or magician Merlin, from Gr. *mageia* = enchantment, and L. *magus* = a magician. The true history of Merlin seems to be—that he was born about 475, and after serving the Briton Ambrosius Aurehanus, passed into the service of King Arthur, the southern leader of the Britons.

(*d*) *Tintagil* was a 'castle by the Cornish sea,' the home of Gorlois and Ygerne.

(*e*) *Samite* is a rich silk stuff interwoven with gold or silver thread. The term is derived from Gr. *hex* = six, and *mitos* = thread of the warp. Tennyson mentions white, red, black and crimson samite.

(*f*) *Vert and Azure.* See answer to Women Candidates.

(*g*) *Great lords from Rome.* Tennyson follows Malory in this incident, which it is very probable may have happened, for in many instances, after foreign occupation had ceased, tribute has been rendered. These *great lords from Rome* came to claim 'the tribute as of yore.'

6. Reproduce, in your own words, the substance of Bacon's Essay on Nobility *or* on Travel.

VI. Nobility is spoken of, first as a portion of an estate, and second as a condition of particular persons.

First, in monarchies it is beneficial in restraining the abuses of sovereign power and as the bulwark of peace and established order. Democracies need it not in such cases as Switzerland, where public and private interest both tend to unity and concord; and as Holland, where a universal equality produces contentment through fairly-apportioned burdens. But even in kingdoms, if the Nobility be too powerful, it threatens the throne and impoverishes the commonalty.

Second, with regard to individuals, nobility induces veneration in others and virtue in men of rank themselves. Old families are not so liable to be hated as are new men, and the common people naturally obey men of ancient lineage.

Yet it sometimes gives occasion for envy, by inducing idleness, and room for hatred by repressing the advance of merit.

2. Analyse fully the following passages:—

> Such sleep
> They sleep, the men I loved. I think that we
> Shall never more at any future time
> Delight our souls with talk of knightly deeds
> Walking about the gardens and the halls
> Of Camelot, as in the days that were.

Sentence	Kind of Sentence	Subject		Predicate		Object	
		Simple	Enlargement	Simple	Enlargement	Simple	Enlargement
A A. They, the men I loved, sleep such sleep	Principal	they	the men [whom] I loved	sleep	such sleep		
A2. [whom] I loved	Adj., qual. men	I		loved		[whom]	
B. I think that we shall never...as in the days that were	Principal	I		think		*rest of sentence*	
B2. That we shall never more .....were	Noun, gov. by *think*	we	(that) walking about the ... .were	shall delight	never at any future time with talk of knightly deeds	souls	our
B2*b*. that were	Adj., qual. *days*	that		were			

N.B.—The Adverb *as* may be expanded into an Adverbial sentence '*as we delighted*,' or '*as we walked*.'

Certainly the best means to clear the way in this same wood of suspicions is frankly to communicate them with the party that he suspects, for thereby he shall be sure to know more of the truth of them than he did before.

Sentence	Kind of Sentence	Subject		Predicate		Object	
		Simple	Enlargement	Simple	Enlargement	Simple	Enlargement
B A. Certainly the best means to clear.....he did before	Principal	means	the best to clear the way .....of suspicions	is frankly .....he suspects	for thereby he shall..... did before		
A2. that he suspects	Adj., qual. *party*	he		suspects		that	
A3. for thereby he shall be sure to know.....he did before	Adv. mod. *to communicate*	he	(for)	shall be sure to know..... did before	thereby		
A3*b*. he did before	Adv. mod. *more*	he		did [know]	before		

3 (*a*). Explain the terms—Simple, Complex, and Compound, as applied to sentences: and analyse—'Methinks the lady doth protest too much.'

Sentence	Kind of Sentence	Subject		Predicate		Object	
		Simple	Enlargement	Simple	Enlargement	Simple	Enlargement
III. (*a*) A. Methinks the lady doth protest too much	Principal	[it] the lady doth ..... too much		methinks OR thinks		me (*indirect*)	
A2. The lady doth protest too much	Noun sent. subj. to *thinks*	lady	the	doth protest	too much		

III. (*a*). (1) A *Simple* Sentence contains only ONE finite verb, and therefore makes but one assertion, as *William married Mary.*

(2) A *Compound* Sentence contains *more than one* finite verb, and which make assertions of equal grammatical dignity. The different sentences constituting a Compound Sentence are called Co-ordinate Sentences, as *William married Mary, but Jane was married to John.*

(3) A complex sentence is one that contains at least one Subordinate Sentence, as *I will come when I am ready.*

(*b*) A Factitive Verb in its active form has two completions—(1) A word in the objective case; (2) A word in the objective case, or an adjective, or an infinitive. Give examples of each kind; and express the same thought in the passive form.

III. (*b*) (1) The people made Saul *king* (active).

Saul was made *king* by the people (passive).

(2) God created man *pure* (active with adj.).

Man was created pure by God (passive with adj.)

(3) The depth will compel him *to swim* (active with infinitive).

He will be compelled by the depth *to swim.*

N.B. — It is very doubtful whether a Factitive Object is ever followed by an Infinitive.

SECOND YEAR.

Male Candidates.

Composition.

Write in plain prose an essay on one *of the following subjects :—*

Essay on Superstition.

Superstition in the abstract is an unreasonable belief in, or dread of, the divine or supernatural: superstitions in the concrete are these unreasonable beliefs or fears.

There is no people or nation, nor perhaps any individual, altogether free from superstitions, and with many persons of the more ignorant sort it is hard to tell where religion ends and superstitions begin. Indeed, corrupt religions, with cunningly devised frivolous fables, commonly lead either to atheistic non-belief, or to superstitions of a degrading kind.

Therefore it has been said that '*it were better to have no opinion of God at all than such an opinion as is unworthy of Him; for the one is unbelief, the other contumely; and certainly Superstition is the reproach of the Deity.*'

Addison has drawn an instructive and amusing sketch of individuals enslaved to superstitions. To such persons thirteen at a table inspires mortal dread, and a couple of magpies an agony of fear. They hear death in the howl of a dog and the tick of a beetle, and see forthcoming misfortune in crossed knives and spilt salt.

The antidotes to superstitions are a deep-seated belief in an all-ruling Providence, a well-informed and stably-settled mind, and the preservation of bodily health.

Grammar.

1. *Paraphrase* one *of the following:—*

(*a*) And let his Travel rather appear in his Discourse, than in his apparel or gesture; and in his Discourse let him rather be advised in his answers, than forward to tell stories; and let it appear that he doth not change his country manners for those of foreign parts; but only prick in some flowers of that he hath learned abroad into the customs of his own country.

I. (*a*) Travel should evidence itself more by influence upon conversation than by outlandish clothing and behaviour. Moreover, a traveller should be cautious in his replies, and not eager to relate the marvels he has beheld. It should be manifest that a man has not discarded native customs for those picked up abroad; but rather that he has engrafted meritorious practices upon those previously observed at home.

(or *b*)

Woe is me!

Authority forgets a dying king,
Laid widowed of the power in his eye,
That bowed the will. I see thee what thou art,
For thou the latest left of all my knights,
In whom should meet the offices of all,
Thou wouldst betray me for the precious hilt;
Either from lust of gold, or like a girl
Valuing the giddy pleasure of the eyes.

(*b*) It grieves me deeply to find that no regard is paid to my commands now that I am dying. No longer can I sway your mind by a glance. Your real character is revealed to me. Upon you, the sole survivor of my Table Round, devolved the fulfilment of all knightly duties towards me; yet either drawn aside by avarice, or bewitched by my sword's beauty, you intend to disobey me in order to secure it as a treasure.

2. *Analyse* one *of the following passages :—*

(*a*) Yet still thy life is whole, and still I live
Who love thee; but who hates thee, he that brought
The heathen back among us, yonder stands
Modred, unharm'd, the traitor of thine house.

Sentence	Kind of Sentence	Subject		Predicate		Object	
		Simple	Enlargement	Simple	Enlargement	Simple	Enlargement
II. (*a*) A. Yet still thy life is whole	Principal	life	(Yet) thy	is whole	still		
B. And still I live who love thee	Principal	I	(and) who love thee	live	still		
B2. who love thee	Adj., qual. *I*	who		love		the	
C. but who hates thee, he that brought ..... the traitor of thine house	Principal Adversative to A and B	he	(but) Mod-red, the traitor of thine house, unharmed, that brought the heathen ..... among us, who hates thee	stands	yonder		

or (*b*) Hadst thou but shook thy head or made a pause
When I spake darkly what I purposed,
Or turned an eye of doubt upon my face,
As bid me tell my tale in express words,
Deep shame had struck me dumb.

Sentence	Kind of Sentence	Subject		Predicate		Object	
		Simple	Enlargement	Simple	Enlargement	Simple	Enlargement
C2. who hates thee	Adj., qual. *he*	who		hates		thee	
C3. that brought the heathen back among us	Adj., qual. *he*	that		brought	back among us	heathen	the
II. (*b*) A. Hadst thou but shook thy head or made a pause, when I spake darkly what I purposed..... ..... deep shame had struck me dumb	Principal	shame	deep	had struck	hadst thou but shook thy head .t..... ..... tale in express words	me dumb	
A2. Hadst thou but shook thy head when I spake darkly..... purposed	Adv., mod. *had struck*	thou		hadst shook	but when I spake ..... what I purposed	head	thy

Sentence	Kind of Sentence	Subject		Predicate		Object	
		Simple	Enlargement	Simple	Enlargement	Simple	Enlargement
A2*b*. when I spake darkly what I purposed	Adv., mod. *shook*	I	(when)	spake	darkly	what I purposed	
A2*b*. B. what I purposed	Noun, gov. by *spake*	I		purposed		what	
A3. or made a pause	Adv., co-ordinate with A2, mod. *had struck*	[thou]	(or)	[hadst] made		pause	a
A4. or turned an eye of doubt upon my face as bid me tell my tale in express words	Adv., co-ordinate with A1 and A3, mod. *had struck*	[thou]	or	[hadst] turned		eye	an, of doubt, as bid me tell my..... in express words
A4*b*. as bid me tell my tale in express words	Adj., qual. *eye*	as		bid		me to tell my tale	in express words

3. *Write such grammatical notes as seem needful to you on the following passages* :—

(*a*) I see thee what thou art.

(*a*) *I see thee what thou art.* See answer '3d' of Women Candidates—First Year.

(*b*) If a man watch too long, it is odds he will fall asleep.

(*b*) (1) The first sentence, '*If a man watch too long*,' is adverbial and hypothetic.

(2) *It* is idiomatically redundant and introductory.

(3) '*He will fall asleep*' is a noun sentence = *it*, and subject to *is*.

(4) *Odds* has no singular. Copulative verbs, as in this instance, may have their two subjects (the one before and the one after the verb), different in number.

(*c*) Whose tongue soe'er speaks false,
Not truly speaks.

(*c*) (1) '*Whose tongue soe'er*,' is an instance of Tmesis, c. f. 'to God ward,' 'what place soe'er.'

(2) *False* is an adjective used factitively, not an adjective used instead of an adverb. It refers not to the manner (as does the following adverb *truly*) but to the matter.

(*d*) There's few or none do know me.

(*d*) (1) '*There's few.*' Shakespeare regarded '*there is* 'as an idiom which could be followed by either the singular or plural, like '*il y a*,' in French. Compare '*There's toys abroad.*' (I., i., 232.)

(2) The subject to *is* may in this instance be accounted '*few or none do know me*,' *or* the relative *who* may be understood after '*none.*'

(3) *None* is the negative of *one*, and is thus singular.

(4) *Do know* is an emphatic form. *Know* is infinitive governed by do.

(*e*) Grief fills the room up of my absent child,
Remembers me of all his gracious parts.

(*e*) (1) *Grief* is personified, rendered concrete instead of abstract.

(2) *Up* is prep. used as an adverb mod. *fills.*

(3) *Remembers me. Remembers* is used causatively = reminds. Compare '*I walked the horse.*'

(*f*) Do, an if you will.

(*f*) (1) *Do* is imperative.

(2) *An if* are double conjunctions. *An* is a contraction of *and*, which in middle English often equalled *if*, according to Scandinavian example. Compare '*But and if ye suffer.*' (I. Peter iii. 14.)

4. Give some account of what Bacon has to say of 'Great Place,' showing how his own life illustrates any of his arguments, *or* of 'Friendship.'

IV. Of Great Place.

(*a*) Men in great place are under a threefold servitude. It is difficult to rise to, easy to slip from, and impossible to continue in office. Office creates no felicity, except what accrues from officials being thought happy.

Those in high position should study the examples, both bad and good, previously set them, and also the history of things which have become abuses. The dignity of office should be tacitly assumed; the rights of inferiors be uninterfered with, and reforms introduced without ostentation; whilst advice should be respected and sought for.

To facilitate business, easy access must be allowed, punctuality observed, and there must be no confusion of affairs. To preserve impartiality, prevent suitors from offering bribes, maintain opinions firmly, or change them openly, giving good reasons, and have no favourite.

In behaviour, neither roughness nor too great complaisance is advisable.

Great place brings out conspicuously inherent virtue or vice. A man should rise by means of party, should then preserve office by 'balancing' himself, and should keep his public and private affairs utterly distinct.

(*b*) (1) Bacon's servitude was shown by his prosecution of his benefactor Essex.

(2) The difficulty of rising is demonstrated by the fact that although he entered Parliament in 1584, it was 1603 before he was knighted, and 1607 before he became Solicitor-General. Previously he had unsuccessfully sued both for this office and that of Attorney-General.

(3) Bacon 'rose by means of party,' and was even in 1593 forbidden to come into the Queen's presence.

(4) He began 'balancing himself' after he was knighted, and was repeatedly chosen to be spokesman for committees of the House of Commons in conference with the Lords, 1604.

(5) 'He changed his opinions, openly giving good reasons.' His attitude toward Essex was defended by a printed apologia. '*Sir Francis Bacon, his apology in certain imputations concerning the late Earl of Essex.*'

(6) Bacon repeatedly showed that he reformed unostentatiously, preserved quietly his official dignity, respected his inferiors' rights, and was easy of access.

5. 'Some relief is given to the gloom of the play by the character of Faulconbridge, who brings an atmosphere of gaiety, daring, and patriotism into it.' Show the truth of this statement.

V. (*a*) Just as Constance's affection is the foil to John's cruelty, so is Faulconbridge's *gaiety*, *daring*, and *patriotism* the contrast to John's gloom, cowardice, and treachery.

(1) His *gaiety* is well expressed in Act I., scene 1, where he chooses rather to be the illegitimate son of Cœur de Lion, than the lawful one of Sir Robert Faulconbridge.

(2) In V., iv., 4 and 5, he is depicted 'alone upholding the battle,' and in III., i., 131, 133, he defies Austria, who dare not accept the challenge after having provoked it.

(3) His *patriotism* is intense and burning. He is indignant with the English nobles who side with Lewis (V., ii., 152), he is ashamed of the King's submission to Pandulph (V., i., 65, 76), and the drama fitly closes with an expression of his absolute confidence in, and love for, his native land.

> 'This England never did, nor never shall,
> Lie at the proud foot of a conqueror
> But when it first did help to wound itself.
> Come the three corners of the world in arms,
> And we shall shock them. Naught shall make us rue
> If England to itself do rest but true.'

(*b*) (1) Pandulph has just been cursing and excommunicating John, and Constance interpolates—

> 'O, lawful let it be
> *That I have room with Rome to curse awhile.*' (III., i., 180.)

meaning, let me be allowed an opportunity to mingle my curses with those of the Roman Pontiff. In Shakespeare's time the words *Rome*, *roam*, *room*, were probably pronounced alike.

(2) The bastard has expressed his willingness 'to shake the bags of hoarding abbots,' and says—

> '*Bell, book, and candle shall not drive me back.*'—(III., iii., 12.)

He will risk excommunication in which these three articles were symbolically employed. A *bell* was tolled, a form of excommunication was read from a *book*, and three *candles* successively extinguished.

(3) *By my Christendom* (IV., i., 16) means by my christening, by my faith as a Christian.

6. Give a sketch of the scene at the foundation of the Round Table, explaining the object of introducing the three Queens, Merlin, and the Lady of the Lake.

VI. (*a*) Arthur sat crowned on his dais, and his warriors cried, 'Be thou the king, and we who love thee will work thy will.' Then the King bound them by strait vows to himself; and them solemnly pale, excitably flushed, and wonderingly dazed, he cheered with large, divine, and comfortable words, until the faces of the knights were illumined from that of the King.

Then from the casement over Arthur smote three rays of light, flame-colour, vert, and azure, one falling on each of three fair Queens, and typifying respectively Love, Hope, and Faith.

By the King stood mage Merlin, whose vast wit and experience were at his liege's service.

Near, too, was the Lady of the Lake, learned in a subtler magic than even Merlin knew.

The religion, the science, and the mysticism of the age are thus here depicted as enlisted on Arthur's side.

(*b*) (1) Sir Bedivere at Arthur's command bore him to the margin of the lake, striding from ridge to ridge, whilst the frosty air vapourised his breath, and the haze magnified his appearance till he seemed—

> '*Clothed with his breath, and looking, as he walked,*
> *Larger than human on the frozen hills.*'
> —(*Passing of Arthur*, 350, 351.)

(2) 'Then rose the king and moved his host by night,
And ever pushed Sir Modred, league by league,
Back to the sunset bound of Lyonnesse—
A land of old upheaven from the abyss
By fire, to sink into the abyss again.'
—(*Passing of Arthur*, 79-83.)

Lyonnesse was a fabulous country, an extension of Cornwall to the south and west. Upheaved from the deep sea by volcanic forces, it is said to have collapsed again, when the subterranean forces subsided. The sunset bound means the western coast, whither he had driven the rebels.

(3) Then the three Queens took Arthur into the barge and wept; for all his face was pale,

> '*And all his greaves and cuisses dashed with drops*
> *Of onset.*'—(*Passing of Arthur*, 383, 384.)

His *greaves* (armour for the legs below the thighbone) and his *cuisses* (armour for the thighs), were sprinkled and stained all over with bloodshed in the *onset* or attack.

FIRST YEAR.

WOMEN CANDIDATES.

Composition.

1. Write a brief essay on one of these subjects:—

(*c*) 'How small of all that human hearts endure
That part which laws or kings can cause or cure.'

I. (*c*) The sufferings of mankind are, broadly speaking, traceable to three causes or agencies, the operations of Nature, the deeds of our fellow men, and our own actions and dispositions.

We have the further option of regarding these agencies from a moral point of view. Nature inflicts suffering without malevolence, but man is frequently impelled by evil motives.

Human power (represented in the excerpt as *kings*) and legislation can do comparatively little to prevent or mitigate the calamities experienced through natural causes. Not all the legions of Cæsar and Nicholas, not all the wisdom of Solomon and Confucius, not all the laws of Solon, Lycurgus, and Alfred, not all the powers of the British Parliament and the American Senate can delay or allay for one moment the eruption of a volcano, the shock of an earthquake, or the violence of a tempest.

Cities may be buried in ashes and lava, whole towns may be overwhelmed and engulfed, realms devastated, and navies submerged, but puny man and his regulations can only wait and suffer.

Can armies and statutes ward off old age and pain; can they bid to cease the jeering smile, the defaming word, or annihilate the evil passions that inly gnaw the secret heart? Even for social evils, force and laws are often no remedy. Attempts to raise the scale of wages, and the moral tone of society by positive enactments have always turned out worse than failures.

The social advance of man, the evolution of private virtue, the patient endurance of inevitable evil must all be promoted far more by the internal impulse of each individual, than by the external compulsion of kings and laws.

2. Analyse the following passage:—

> Then the king in low deep tones
> And simple words of great authority,
> Bound them by so strait vows to his own self,
> That when they rose, knighted from kneeling, some
> Were pale as at the passing of a ghost,
> Some flushed, and others dazed, as one who wakes
> Half blinded at the coming of a light.

II.

Sentence	Kind of Sentence	Subject		Predicate		Object	
		Simple	Enlargement	Simple	Enlargement	Simple	Enlargement
A. Then the king in low deep tones.....as the coming of a light	Principal	king	the (then)	bound	(rest of sentence)	them	
B. That when they rose..... of a ghost	Adverbial modifies *bound*	some	(that)	were pale	(1) as at..... ghost (2) when they rose..... kneeling		
C. When they rose knighted from kneeling	Adverbial modifies *were*	they	knighted from kneeling	rose			
D. Some [were flushed]	Adverbial modifies *bound*	some		[were] flushed			
E. Other [were] dazed	Adverbial modifies *bound*	others		[were] dazed	as one who wakes .....light		
F. One [is dazed]	Adverbial modifies *dazed*	one		[is dazed]			
G. Who wakes half blinded..... light	Adjective qual. *one*	who	half blinded	wakes	at the coming of a light		

3. Parse the words printed in italic, in the following extracts:—

(*a*) An old man's wit may wander *ere he die*

3. (*a*) *ere*—prep., gov. noun sentence, '*he die*,' *or* temporal conjunct., mod. *wander*, and joins two sentences;

he—pers. pro., sing., 3rd, masc., nom., subj. to *die*;

die—verb, reg. (weak), intrans., subj., pres., sing., 3rd, agree with *he*.

(*b*) *O that ye had* some brother, pretty one,
To guard thee on the rough ways of the world.

(*b*) *O*—interjection with verbal force, gov. the noun sentence *ye had some brother*.

that—conjunction introducing the following sentence.

ye = *thou*—pers. pro., sing., 2nd, com. gen., nom., subj. to *had*.

had—verb reg. (weak), trans., act., subj., pres., sing., 2nd, agrees with *ye* and gov. *brother*.

to guard—verb. reg. (weak), trans., act., infin., qual. *brother*, and gov. *thee*.

(*c*) Nine *years* she *wrought it*, *sitting* in the deeps.

(*c*) *years*—com. noun, plural, 3rd, neut., object., mod. *wrought*.

wrought—[A. S. *wroht* = *worked*] verb, irreg. (strong), trans., act., indic., past, def., sing., 3rd, agree with *the* and gov. *it*.

it—pers. pro., sing., 3rd, neut., obj., gov. by *wrought*.

sitting—verb., irreg. (strong), intrans., pres. partic., qual. *the*.

(*d*) I see *thee what thou art*.

(*d*) *thee*—pers. pro., sing., 2nd, com. gen., obj., gov. by *see*.

what—indef. pro., sing., 3rd, neut., nom., subj. after *art*.

art—verb (*to be*), irreg., copulative, indic., pres., sing., 2nd, agrees with *thou*.

thou—pers. pro., sing., 2nd, com. gen., nom., subj. to *art*.

(*e*) I *thy hest* will *all* perform *at full*.

(*e*) *thy*—pers. pro., sing., 2nd, com. gen., pres., qual. *hest*.

hest—com. noun, sing., 3rd, neut., obj., gov. by *perform*.

all—adj. of quant., qual. *hest*

at—prep., gov. *full*, c. f., *in vain*, *in earnest*, etc.

full—adj., used as com. noun, sing., 3rd, neut., obj., gov. by *at*.

4. Say whence Tennyson obtained the material for the '*Idylls of the King*,' and what, if any, historical foundation there is for these legends.

4. (*a*) We are told that Tennyson, when quite a boy, chanced upon a copy of '*Thys noble and joyous book entytled le Morte D'Arthur*,' by Sir Thomas Malleor, written in 1440, and printed by Caxton in 1485. Upon this Tennyson has founded some of his '*Idylls of the King*,' and has followed his model in many parallel passages very closely.

Other materials our Laureate found in '*Welsh Tales*,' Sir Gildas de Rhys' '*De Excidio, Britannia*,' Geoffrey of Monmouth's '*Historia Britonum*,' and Walter Hap's '*Quest of the Holy Graal*.'

The hint, from which the spiritual side of Arthur's character was evolved, is perhaps taken from Spencer's '*Fairie Queen*.'

In 1838 Lady Charlotte Guest published '*The Harbinger*,' which is a rendering into English of the Welsh legends in the 'red book of *Hergerst*.' Thence Tennyson borrowed the story of Geraint and Enid.

(*b*) All that investigation down to recent times has been able to discover concerning Arthur is, that he was a knightly and skilled leader of the Britons of Cambria and Strathclyde against the Picts and Scots and the Saxons—that he succeeded in gathering around him the flower of his race—that in 520 he won the battle of Mount Baden against the Saxons—but that after about twenty-five years of oscillating fortune he was pressed back by overwhelming numbers, and treacherously slain by his own nephew.

5. In what sense does the poet use these words and phrases, and what is their meaning and origin?—

Puissance, winsome, postern-gate, vert and azure, wizard, the dais throne, lief and dear, unsolders, subtlest jewellery, mage.

V. *Puissance* (Fr. *puissance* = power, force, dominion). Used in the poem either to mean *might* in the abstract or *forces* in the concrete.

Winsome (A. Saxon *wynsum* = pleasant, from *wyn* = joy). Tennyson employs this word in its modern sense, *charming*.

Postern-gate (Fr. *posterne* or *poterne* = a little side gate; L. posterus = behind). Our poet employs it for a small and perhaps secret entrance.

Vert and azure are used by Tennyson as in heraldry to mean green and blue, signifying Hope and Faith. *Vert* is from Fr. *vert*, L., *viridis* = green; *Azure* from Fr. *azur*, Persian *azar* = the blue colour of the sky.

Wizard (from A. Saxon *wisa* = a sage) is used especially to denote Merlin, who claimed some supernatural powers.

The Dais throne was a throne on a raised platform. *Dais* is from Fr. *dais* or *daiz* (L. *discus* = a quoit).

Lief and dear (A. Saxon *leofa* = dear, beloved) a 'doublet' expression.

Unsolders means *disunites*, breaks into *pieces*, from Fr. *soulder* = to consolidate, L. *solidus* = solid.

Subtlest jewellery. Jewellery most cunningly and intricately wrought. (From L. *subtilis* = fine, from L. *sub* = under, and *tela* = a thread; Fr. *subtil* = thin, rare.)

Mage means a man skilled in magic, from L. *magus* = a magian, Gr. *mageia* = enchantment.

6. Explain these passages, quote the context, and show in what connection they stand:—

(*a*) In his ways with men I found him not;
(*b*) God fulfils himself in many ways;
(*c*) Authority forgets a dying king;
(*d*) Truth is this to me and that to thee;
(*e*) The swallow and the swift are near akin.

VI. (*a*) 'I found Him in the shining of the stars,
I marked him in the flowering of His fields,
But *in His ways with men, I found him not.*'

King Arthur utters the same complaint as the Psalmist, that whilst God's hand is visibly ruling Nature, it is not [so] apparent in His governance of man.

(*b*) 'And slowly answered Arthur from the barge:
"The old order changeth, yielding place to new,
And *God fulfils Himself in many ways*,
Lest one good custom should corrupt the world."'

God accomplishes His purposes by different methods; He moves in mysterious ways to perform His wonders.

(*c*) 'To whom [Sir Bedivere] replied King Arthur much in wrath:

"Oh, miserable and unkind, untrue,
Unknightly, traitor-hearted! Woe is me!
Authority forgets a dying king."'

Sir Bedivere, through loss of Excalibur, had disobeyed for the second time the king's behest to throw it into the lake, and bitterly laments that the authority of a dying king is disregarded.

(*d*) 'When I met
Merlin, and asked him if these things were truth—
The shining dragon and the naked child
Descending in the glory of the seas—
He laughed, as is his wont, and answered me.
* * * *
"*And truth is this to me, and that to thee.*"'

What a man believes depends upon the complexion of his mind.

(*e*) 'Leodogran rejoiced, but thought
To sift his doubtings to the last, and asked,
Fixing full eyes of question on her face,
"*The swallow and the swift are near akin*,
But thou art closer to this noble prince,
Being his own dear sister?"'

Leodogran, father of Guinevere, is questioning the Queen of Orkney, Bellicent, as to Arthur's noble birth. His words mean 'One princely soul is related to another as nearly as the swallow is to the swift, but is Arthur your brother, as one swallow is to another swallow?'

7. What is Mr. Stephen's estimate of Dr. Johnson's Dictionary? Relate some of the circumstances attendant on the publication of that work:

VII. (*a*) When Johnson compiled his Dictionary, etymology in a scientific sense was as yet non-existent, and the lexicographer was not in this respect ahead of his contemporaries. To collect all the words in the language, to define their meanings as accurately as might be, to give the obvious or whimsical guesses at etymology suggested by previous writers, and to append a good collection of illustrated passages was the sum of Johnson's ambition. Any systematic tracing of the historical processes by which a particular language had been developed was unknown, and of course the result could not be anticipated.

The work, indeed, required a keen logical faculty of definition, and wide reading of the English literature of the two preceding centuries; but it could, of course, give no play either for the higher literary faculties, or faculties of scientific investigation. A dictionary in Johnson's sense was the highest kind of work to which a drudging literary journeyman could be set, but it was still journeyman drudgery and not work for an artist.

The production corresponded with the Doctor's ideas. Whatever its merits, it was only a book in the material sense, and was of course soon superseded.

(*b*) (1) In the year 1775 the Dictionary was published to which Johnson's name appeared with the degree of M.A., obtained from the University at Oxford by good offices of the Warton. The approaching publication of this work had been favourably announced by Lord Chesterfield some months before, in two papers of the 'World'; but Johnson, conscious of having received no sort of encouragement or support from that nobleman during its progress, addressed to him a celebrated letter replete with pointed sarcasm and manly disdain.

(2) The appearance of the Dictionary placed Johnson in the position described soon afterwards by Smollett. He was henceforth '*the great Cham of Literature*'—a monarch sitting in the chair previously occupied by Ben Jonson, by Dryden, and by Pope, but which has since Johnson's time been vacant.

(3) On the other hand, when the last sheet of the Dictionary had been carried to the publisher Miller, Johnson asked the messenger '*What did he say?*' '*Sir*,' replied the messenger, '*he said* "THANK GOD I HAVE DONE WITH HIM."' 'I AM GLAD,' at once retorted Johnson, 'THAT HE THANKS GOD FOR ANYTHING.'

8. Say who were Johnson's chief friends, and what place any of them occupy in the literary or political history of the time.

VIII. The chief friends of Johnson were Mrs. Thrale, Boswell, Garrick, Richardson, Sir Joshua Reynolds, Edmund Burke, and Goldsmith.

MRS. THRALE, *née* Miss Hester Lynch Salisbury, was a woman of considerable parts and attainments, who contracted 'a marriage of convenience' and dabbled in literature as her sole resource. She was until her second marriage a true friend to Johnson, and set apart a room in her house for him, for upwards of sixteen years.

JAMES BOSWELL, born in 1740, made Johnson's acquaintance in the summer of 1763. He was a mind of absurd vanity, of greedy craving for notoriety, yet of a most unfeigned good-humour, and of genuine talents. He has been far too severely handled by Lord Macaulay; for a man who has written the best biography in the world cannot be so utterly inane as he was represented to be.

DAVID GARRICK, the world-renowned actor, was one of Johnson's earliest friends, and even a pupil of his at Lichfield. Despite many quarrels, our poet said 'that *Garrick's death had eclipsed the gaiety of nations and diminished the public stock of harmless pleasures.*'

SAMUEL RICHARDSON, the father of the modern novel, wrote '*Pamela*,' '*Clarissa Harlowe*,' and '*History of Sir Charles Grandison*.' He rendered substantial help to Johnson, who repaid him by favourable comparisons with Fielding, which are scarcely endorsed by the verdict of posterity.

SIR JOSHUA REYNOLDS, an eminent English painter, founded in conjunction with Dr. Johnson the famous '*Literary Club*' in 1764. On the institution of the Royal Academy, 1768, he was unanimously chosen president. As a writer he obtained reputation by his '*Discourses*.' His works have been republished in 1797 and 1835. In Goldsmith's poem '*Retaliation*' he is the favourite character.

EDMUND BURKE was a writer, orator, and statesman of great eminence. He wrote an '*Essay upon the Sublime and Beautiful*,' '*Thoughts on the Causes of the Present Discontents*,' '*Reflections on the Revolution in France*,' etc. His greatest speeches were in connection with the impeachment of Warren Hastings, and in denunciation of the French Revolution. He occupied the post of '*Paymaster-General of the Forces*' in the Rockingham administration of 1783, and held a seat at the Council Board.

OLIVER GOLDSMITH, a hack-writer, a poet and a novelist, has deservedly won great fame as an exponent of pure, smooth, and picturesque English. '*She Stoops to Conquer*,' '*The Deserted Village*,' and the '*Vicar of Wakefield*' are still justly popular.

9. Describe the versification employed by Lord Tennyson in the Arthurian poems; quote one or two lines which appear to you to be perfect or typical examples of the metre, and give reasons for selecting them.

IX. The Arthurian poems are written in Iambic pentameter, containing, therefore, in each stanza or line ten syllables, short and long (unaccented and accented) alternately, and five feet.

Line 79, *Passing of Arthur*.

'Thĕn rōse | the KĬng | aňd mōved | hĭs hōst | bў nĭght | '

In the above example the unimportant words, *then*, *the*, *and*, *his*, *by*, are unaccented or short, whilst the important ones *rose*, *King*, *moved*, *host*, and *night* are accented or long.

Lines 289-291, *Coming of Arthur*.

(*a*) 'But there | was *h*eard | among | the *h*o- | ly *h*ymns |
A voice | as of | the wa- | ters, for | she *d*wells |
ALLITERATIVE. *D*own in a *d*eep.'

Line 188, *Coming of Arthur*.

(*b*) Was wed- | ded with | a win- | some wife | Ygerne
ONOMATOPOETIC.

Lines 238-239, *Passing of Arthur*.

'I heard | the rip- | ple wash-ing in | the reeds
And the | wild wa- | ter lap- | ping on | the crag.'

10. What do you regard as the chief merits of these poems? Quote from them any examples of felicitous epithets, of striking imagery, or of important truths, which appear to you to be worth remembering.

X. (1) The Arthurian poems are artistic, didactic, imaginative and impressive.

(*a*) The ART is displayed in the structure and melody of the verse, in the unity of the purpose, and in the descriptive skill.

(*b*) MORALITY is taught both by the plot and by the reflections introduced.

(*c*) The power of IMAGINATION is revealed in the depiction under transfigured forms of an age gone by, by the invention of mystical and supernatural elements, and by the beautiful images, similes and illustrations introduced.

(*d*) Most IMPRESSIVE and interesting are the poems through the skilful blending of all the qualities previously named, through the union of the actual and the ideal, the narrative and descriptive, the human and the supernal, and the mingling of action with analysis of character.

II. (*a*) *Felicitous epithets* :—

Long-lanced battle, bright dishonour, wage-work, haze-hidden, sunset-bound, phantom circle, rolling year, death-white mist, monstrous blasphemies, zig-zag paths.

(*b*) *Striking imagery* :—

(1) 'Arthur looking downward as he passed,
Felt the light of her eyes into his life.'

(2) 'A voice
As dreadful as the shout of one who sees
To one who sins, and deems himself alone.'

(3) 'The fire of God
Descends upon thee in the battle field'

(4) 'The great brand
Made lightnings in the splendour of the moon,
And flashing round and round, and whirled in an arch,
Shot like a streamer of the northern morn,
Seen where the moving isles of winter shock.'

(*c*) *Important truths* :—

(1) 'Man's word is God in man.'
(2) 'A doubtful throne is ice on summer seas.
(3) 'A young man will be wiser by and by,
An old man's wit may wander ere he die.'
(4) 'These eyes of men are dense and dim,
And have not power to see it [the world] as it is.'
(5) 'I pass, but shall not die.'
(6) 'The king who fights his people, fights himself.'
(7) 'A little thing may harm a wounded man.'
(8) 'This is a shameful thing for men to lie.'
(9) 'Obedience is the bond of rule.'

11. Contrast briefly the conceptions of duty and of a noble life which characterise the age of chivalry with that which prevails in modern times.

XI. The modern conceptions of a life ennobled by the discharge of duty are far higher and more embracing than those obtaining in the days of chivalry.

Then doughty deeds and brilliant achievements altogether obscured faithful fulfilment of ordinary obligations, and a lowly self-sacrifice for the good of one's fellows.

Then the poor, the sick, the afflicted, if of humble birth, were disregarded as being outside the pale of chivalrous consideration, and there was no idea of union between 'class and mass,' no vision of responsibility imposed by the mere possession of riches, talent and power.

Coercion then endeavoured to effect what is now the office of persuasion, and external pressure upon the people supplied the place of internal conviction.

Then every man was a law unto himself, and even when rightly-disposed, redressed grievances in a high-handed manner; now we obey the law, and seek satisfaction for injuries at the national tribunals.

LONDON MATRICULATION.

OUR PREPARATION CLASS FOR PRIVATE STUDENTS.

BY T. RUSSELL MALTBY, M.A.
Kingswood School, Bath.

JUNE, 1892.

(SECOND MONTH.)

I. LATIN.

Notes on January Work.

Allen's Grammar, Sects. 1-58.

(1) Attention should be given from the first to the quantity of the vowels in Latin words, and a clear distinction made in pronouncing vowels long and short.

(2) In the inflexions of nouns, final I, O, and U are always *long*; final A is *short*, except in abl. sing. of 1st decl.; final E is *long* in the 1st and 5th, *short* in the 2nd and 3rd declensions.

(3) Notice the formation of the nominative from stems like *magistrŏ-*:—(*a*) *s* is not added (as in *murus*), (*b*) *o* is dropped, (*c*) *e* is intruded before *r*. This process has not taken place in *hesperus*, *numerus*, *taurus*, *umerus*, *uterus*, *virus*, and a few others.

(4) To the list of nouns like *puer* add *adulter*. Those like *magister* include *ager*, *aper*, *arbiter*, *auster*, *cancer*, *caper*, *coluber*, *culter*, *faber*, *liber*, *minister*. Learn these with their meanings.

(5) *Judex*. Stems in *-ĭc-* make nom. in *-ex*, except *appendix*, *salix*, and four or five rare words. Stems in *-īc-* make nom. in *-ix*.

(6) *Leo*. Nominatives in *-o* come from stems in *-ōn-* or from stems in *-īn-* (as *virgo*).

(7) *Miles*. Stems in *-ĭt-* make nom. in *-ĕs*, except *caput*, neuter.

(8) The accusative plural ending *-is* belongs to *vowel* stems.

(9) Remember that most 4th declension nouns are formed from verb-stems by means of the suffix *-tus* (or *-sus*). Make a note of any noun of the 4th declension which you might have classed in the 2nd.

(10) In the 5th declension *dies* and *res* only have full plural. The following have nom. and acc. plural, *acies*, *effigies*, *eluvies*, *facies*, *glacies*, *series*, *species*, *spes*.

(11) To the list of adjectives like *tener* add *prosper*

(also *prosperus*) and *satur* (*-ura, -urum*). Those like *niger* include *aeger, ater, creber, integer, ludicer, macer, piger, pulcher, ruber, sacer, sinister*; also *noster, vester*. Learn these with their meanings. The following have no *masc.* nom. sing.:—*ceter-, infer-, poster-, super-*.

(12) Compare the forms of adjectives of the 2nd class (Sect. 22) with substantives of 3rd decl. Note *-ium* in gen. plur. of all except comparatives.

Aeneid VI., 1-294.

(1) Prepare worthy translations of the following passages, 46-53, 77-80, 199-209, 268-281.

(2) The difficulties of the following lines should be mastered, 22 and 23, 96, 141, 199 and 200, 214.

(3) The following words have been used with special meanings:—*semina, redditus* (prefix), *sed enim, quin, præcepi, refuso, dictus, figit, circum, alte* and *alta, forte, defleta* (prefix), *circumtulit, novissima, solida*.

(4) Moods to be explained—*sineret, videri, canas, ciere, possent*.

Latin Course for February.

1. *Allen, Sects. 57-85.* Deponent, Anomalous, Defective, and other Verbs. Notes on the Conjugations, Particles, Conjunctions.

2. *Allcroft and Haydon, Sects. 80-150.* The work in Syntax should be intelligent as well as painstaking. All but the simplest examples should be learned. Take note of illustrations of the rules in Vergil and Translation at Sight.

3. *A. and H. Exercises IV., V. and VI.* A's and B's only; 60 sentences. See remarks in January P.T.

4. *Vergil, Aeneid VI., 295-627.*

5. *Translation at Sight. Hardy's Reader* (starting at page 11), Nos. 1, 2, 5, 6, 22, 23, 24, 29, 31, 34, 35, 36, 40. We advise *written* work—about three extracts a week. Read each passage through before attempting a translation. Bear in mind the conditions of the examination, and use the vocabulary for correction only. Some candidates will do well to give a special amount of time to this part of their work, taking for the purpose the Introductory Stories, pages 1-10. In case of sore perplexity a reader might betake himself to the Query Column.

II. GREEK.

Notes on January Work.

Anabasis IV., Chapter 1.

(1) Work with a map before you, and draw one for yourself to illustrate Book IV. in particular.

(2) Grammatical forms:—*ἐκρίματο, ἐπίστευτο, αἰχμάλωτα, ἐπικέοιντο, παρεγγυᾶτο, ἀνελέσθαι, εἰδεῖεν*.

(3) Bring out the force of the *tense* in—*τῶν ἁλισκομένων* (Sect. 3), *πορευομένων* (6) (*without* article), *τὸ ὑπερβάλλον* (7), *καλούντων* (9) (*without* article).

(4) *δῆλον* (13). The *accusative* absolute is the rule when the verb to be used is impersonal.

(5) The *εἰ* clauses of this chapter call for careful study. In Sect. 3, *εἰ διέλθοιεν* is in Or. Obl., and would be *ἐάν* with Subj. in Or. Recta. (*ἐάν* cannot be used with Opt.) see (*b*) below. The original apodosis is preserved.

(6) In Sect. 8 *εἴ πως ἐθελήσειαν* is a protasis of class (*c*) with the apodosis suppressed. Translate *in case*.

(7) In Sect. 11 *εἰ - - - συνελέγησαν* is an instance of (*e*). The apodosis, according to rule, contains *ἄν* with the same mood and tense as the protasis.

(8) In Sect. 14 *εἴ τι εὑρίσκοιεν* is a protasis expressing repetition, and the apodosis likewise expresses repetition. The Optative followed by an Imperfect Indicative is the regular construction for Iterative Conditional Sentences (Historic). *εἴ τι, whatever*.

(9) In Sect. 23, *εἰ - - εἰδεῖεν* is not conditional, but a common form of indirect question. *εἰ, whether*.

(10) In Sect. 25, *εἰ - - προκαταλήψοιτο* would be *εἰ - - προκαταλήψεται* in Or. Recta. This is a vivid form of protasis (*b*). *ἔσεσθαι* represents the regular form of the apodosis,—a fut. indic.

(11) In Sect. 27, *εἴ τις - - ἔστιν* is an indirect question like (9) above, but the original mood is retained. In Sect. 28, *εἴ τις - - ἐθέλοι* is like (9) above.

(12) Scheme of conditional clauses:—

CONDITION	PROTASIS
a. Assumed	*εἰ* with Indic.
b. Possible	*ἐάν* with Subj.
c. Imaginary	*εἰ* with Optat.
d. Impossible (Present time)	*εἰ* with Imperf. Indicative
e. Impossible (Past time)	*εἰ* with Aorist Indicative

Greek Course for February.

1. *Abbott and Mansfield, Sects. 101-121.* Prepositions, Regular Verbs, Contracted Verbs.

2. *Xenophon, Anabasis IV. Chapters II. and III.* (*to Sect. 16*). See January P.T.

3. *Translation at Sight.* We advise candidates to begin by adding to their vocabulary numbers of serviceable words. For this purpose the class book, *Initia Græca, Part II.*, will serve admirably.

FRENCH.

On the January work the sections in Breymann, headed *Peculiarities of Weak Verbs*, and *Verbs used Interrogatively and Negatively*, should be revised repeatedly. Take practice in applying the rules.

French Course for February.

1. *Breymann, to the end of Strong Verbs* (p. 98). Much hard work will be required in these pages.

2. *Fasnacht, Extracts 9-11, 22 and 23, 25-27, 38-40, 49-51.* Make notes of words and phrases not known. Use the imitative exercises.

3. Of the above extracts, make *written translations* of Nos. 9 (Mort de Socrate), 26 (Pompéi), 49 (La Poésie). We hope that our readers are making use of Professor Darqué's columns in the PRACTICAL TEACHER. The private student could have no better training than the careful comparison of the columns of *La Jeune Sibérienne*.

4. *Word-lists* and *Phrase-lists* should be compiled from all your reading, and regularly revised.

III. ENGLISH.

1. *Mason, pp. 9-17.* Introduction, Alphabet, Anomalies of the English Letter System, Accent. Definitions are important, and should be so marked that they may be readily revised. All work on the Alphabet is very important for London candidates. When these pages are mastered, read—

2. *Hewitt and Beach, pp. 563-588.* Learn the summary on p. 580, and answer the questions on p. 582.

3. Practice in Analysis of Sentences.

4. *Ransome's History, to 1399, with the Geography relating thereto.*

IV. MATHEMATICS.

1. *Capel's Handbook of Arithmetic, Part IV.* (Decimals.) Work out a few examples.

2. *Capel's Handbook of Algebra, Chapters XIX. to XXII.* Simple Equations, Miscellaneous Questions, Problems. Work plenty of examples. In Arithmetic and Algebra cultivate a good *style*. Notice the character of recent Matriculation Papers.

3. *Hall and Stevens's Euclid, pp. 87-119.* Theorems and examples on Book I. These pages are admirably designed. Study carefully the examples worked out, and (for this month) give up several hours a week to applying the methods to other exercises.

V. MECHANICS.

Magnus, Mechanics, Chapters III. to V. Measurement of Force, Newton's Laws of Motion, Energy. These chapters contain several important definitions. Draw Attwood's machine from memory. Work out all the examples you can, and mark those which prove too difficult.

VI. CHEMISTRY, OR HEAT AND LIGHT.

Kemshead, Chapters I., II., and VII. Preliminary Explanations and Hydrogen.

Stewart, Chapters V. to VII. Expansion of Gases, Calorimetry, Liquefaction and Solidification. Make drawings of all the instruments. Follow the calculations, and work out *all* the examples. Some of the Matriculation questions (pp. 72 and 73) should be attempted.

—o—

THE 1892 SCHOLARSHIP EXAMINATION.

BY DR. GEORGE BEACH, M.A.

Co-Author of 'A Manual of our Mother Tongue,' 'A Girl's Arithmetic,' Author of 'Elements of English,' 'Entertaining Readers,' etc.

1. So many questions have been asked the ladies respecting the sewing *requirements* for the various Standards and years of apprenticeship, and the *faults* most frequent in occurrence and most to be guarded against, that we shall devote a little space in our next two or three articles in dealing with the subject roughly denominated 'Needlework.' We shall not give the *requirements*, as these can be easily learnt from the Code; we merely, but emphatically, recommend their careful study and committal to memory. Nor will the *general* faults, such as those of inattention, inaccuracy, biting cotton, dirtying of specimens, and the use of unsuitable materials be at present dealt with; but those *faults* will be treated of, respecting which queries have most frequently been propounded.

Moreover, where the *requirements* of one Standard overlap those of other Standards, and the *faults* of one Standard therefore repeat themselves in another, we shall not duplicate our remarks, but shall rely upon the intelligence of our readers to supply for themselves, from preceding observations, any apparent deficiencies.

With these few preliminaries we at once commence.

MOST COMMON FAULTS IN 'SEWING,' ETC.

INFANTS. Incorrect holding of cotton after making of stitch, causing repeated unthreading of needle and knotting of cotton; stitch not showing through the back of material; puckering and drawing-up of lower stuff through wrong holding of needle.

Knitting. Dropped stitches; dropped stitches picked up in wrong direction; incomplete stitches; additional stitches, weakening of knitting by splitting of stitches.

STANDARD I.—*Hemming.* Commencing with knot; not leaving sufficient (with *one* cotton at commencement and *both* cottons in the join) to achieve security.

Seaming. Stitches irregular as to direction, distance, size and depth; puckering caused by holding the work incorrectly and too loosely; not 'fastening off' securely; seams not flattened.

Knitting. 'Casting-off' too tightly; irregularity caused by varying tension; breaking-off too carelessly; forgetfulness causing chain-edge to be spoiled.

STANDARD II.—*Sewing, etc.* In *fixing* not turning-in sufficient, or too much, for fell; turning double fold wrong way; misplacing after turning down; ends of pieces not coinciding.

Knitting. Not keeping to pattern (ribbing).

STANDARD III.—*Band.* Band not turned to thread; ends of band badly placed; corners and tacking untidy; taking, when back-stitching, an unequal number of threads in front and behind; placing needle too high or too low when making backstitch; tension of stitch not well regulated; incorrect fastening off and on, and even when correctly done at the back showing thread through to right side.

Sewing on string. Tapes put on incorrectly as to side of material; tape not set parallel with material and too near the edge; end of tape not hemmed; corner of hem left unfinished; irregularly-shaped stitches caused by improper holding of the work.

Knitting. Faults at commencement of each needle through placing the needle inside instead of outside previous needle; faults of joining through neglecting to catch-up both wools properly; looping of either wools; neglecting to knit properly the double stitches of following round; not neatly cutting away surplus wool after joining is secure, and thus pulling the knitting.

Darning. Missing threads; irregular looping resulting in too tight darning; alternate stitches neglected in alternate rows.

Herring-boning. Threads incorrectly counted; corner not properly turned; untidy and insecure fastenings-off. [Single thread, or cheese-cloth canvas (not Penelope) to be used. The Department's Instructress (or Examiner) of Needlework objects most strongly to the use of the last-named kind.]

Turning down and fixing for hemming the four sides of the joined material.

Corners incorrectly turned; portion of hem crossing the join badly turned and not tacked sufficiently flat.

N.B.—The above portion of this Article has practically been written by TWO *Head Mistresses where schools have* NEVER MISSED THE EXCELLENT MERIT GRANT, *and who have received high official encomiums for their* 'NEEDLEWORK.'

(To be Continued.)

2. *An important 'Life' often requested but not found in ordinary Text-Books in sufficient detail.*

Lucius Cary Falkland, a Scotch Viscount, was born in 1610, and taken whilst still very young into Ireland. He was educated at home, Trinity College, Dublin, and St. John's College, Cambridge.

After closing his university career he travelled for some time, and on his return devoted himself to the study of polite literature, residing at Burford, near Oxford, where he was constantly surrounded by the most famous scholars.

In his twenty-fourth year he was appointed Gentleman of the bedchamber to Charles I.

Seven years later he was elected M.P. for Newport in the Isle of Wight, and most warmly supported the Parliamentary cause, but was averse to extra-constitutional action.

Accordingly when hostilities commenced he joined the Royal army and took part in the battle of Edgehill and the siege of Gloucester.

But his patriotic spirit was broken by a conviction of the sinister objects of both parties, and he sought and found death at the early age of thirty-four, at the battle of Newbury.

His character was of rare social and cultured excellence, but claims little admiration for practical ability. He forgot that 'revolutions are not accomplished with rose water.'

3. ALTERNATIVE METHODS OF EUCLID, ETC.—(*Continued.*)

EUCLID II. 4.—If a straight line be divided into any two parts, the square on the whole line is equal to the square on the parts with twice the rectangle contained by them.

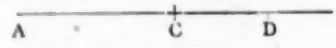
Let A B be divided in C; then $\overline{AB}^2 = \overline{AC}^2 + \overline{CB}^2 + 2AC, CB$.

Proof.—$\overline{AB}^2 = AB.\ BC + AB.\ AC$ (II. 2);
But $AB.\ BC = AC.\ CB + \overline{CB}^2$.
And $AB.\ AC = AC.\ CB + \overline{AC}^2$.
$\therefore AB.\ BC + AB.\ AC = \overline{AC}^2 + \overline{CB}^2 + 2AC.\ CB$.
$\therefore \overline{AB}^2 = \overline{AC}^2 + \overline{CB}^2 + 2AC.\ CB$.

Q. E. D.

EUCLID II. 5.—If a straight line be divided into two equal and also into two unequal parts, the rectangle contained by the unequal parts with the square on the line between the points of section is equal to the square on half the line.

Let AB be divided equally in C and unequally in D.



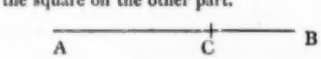
Then AD, DB + $\overline{CD}^2$ shall = $\overline{CB}^2$.
Proof.—$\overline{CB}^2 = \overline{CD}^2 + \overline{DB}^2 + 2CD.\ DB$ (II. 4).
but $\overline{DB}^2 + CD.\ DB = $ (II. 3) $CB.\ BD = AC.\ BD$
$\therefore \overline{CB}^2 = \overline{CD}^2 + AC.\ BD + CD.\ DB$
but $AC.\ BD + CD.\ DB = AD.\ DB$.
$\therefore \overline{CB}^2 = \overline{CD}^2 + AD.\ DB$. Q. E. D.

Similarly Prop. II. 6 can be proved without the aid of any construction.

Both Euclid II. 5 and II. 6 are contained in the following enunciation :—

The rectangle contained by the sum and difference of two unequal straight lines, is equal to the difference of their squares.

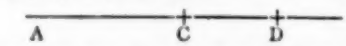
EUCLID II. 7. If a straight line be divided into two parts, the squares on the whole line and on one part are together equal to twice the rectangle contained by the whole and that part, with the square on the other part.



Let AB be divided in C; then
$\overline{AB}^2 + \overline{BC}^2$ shall = $2AB.\ BC + \overline{AC}^2$.
Proof.—$\overline{AB}^2 = \overline{AC}^2 + \overline{BC}^2 + 2AC.\ CB$ (II. 4).
$\therefore \overline{AB}^2 + \overline{BC}^2 = \overline{AC}^2 + 2\overline{BC}^2 + 2AC.\ CB$.
but $2\overline{BC}^2 + 2AC.\ CB = 2AB.\ BC$ (II. 3).
$\therefore \overline{AB}^2 + \overline{BC}^2 = 2AB.\ BC + AC^2$. Q. E. D.

EUCLID II. 8 is never asked for.

EUCLID II. 9. If a straight line be divided into two equal and also into two unequal parts, the squares on the unequal parts are together equal to twice the squares on half the line and on the line between the points of section.



Let AB be divided equally in C and unequally in D.
Then $\overline{AD}^2 + \overline{DB}^2$ shall = $2\overline{AC}^2 + 2\overline{CD}^2$.
Proof,
$\overline{AD}^2 + \overline{DB}^2 = \overline{AC}^2 + \overline{CD}^2 + 2\ AC.\ CD + \overline{DB}^2$ (II. 4.)
But $2\ AC.\ CD = 2\ BC.\ CD$
$\therefore \overline{AD}^2 + \overline{DB}^2 = \overline{AC}^2 + \overline{CD}^2 + 2\ BC.\ CD + \overline{DB}^2$
But $2\ BC.\ CD + \overline{DB}^2 = \overline{BC}^2 + \overline{CD}^2$ (II. 7) $= \overline{AC}^2 + \overline{CD}^2$
$\therefore \overline{AD}^2 + \overline{DB}^2 = 2\ \overline{AC}^2 + 2\ \overline{CD}^2$

Q. E. D.

Similarly Prop. II. 10 can be proved without the aid of any construction.

Both Euclid II. 9 and II. 10 are comprised in the following enunciation :—

If there be two unequal lines, then the sum of the squares described upon the sum and difference of these lines is double the sum of the squares upon the original lines.

EUCLID II. 14 may be thus stated—

(*a*) In any right-angled triangle, if a perpendicular be dropped from the right angle upon the base, then the square upon the perpendicular is equal to the rectangle contained by the segments of the base.

(*b*) In any circle, if the diameter bisect a chord drawn at right angles to it, then the rectangle contained by the segments of the diameter is equal to the square on half the chord.

4. ALGEBRA, ETC.

(*a*) *A dealer* BOUGHT *a number of calves for £80. If each calf had cost him £1* LESS, *and he had bought* 4 MORE, *the total price would have been the same. How many did he* BUY?

Let x in £ = number of calves bought.
Then $\frac{80}{x}$ = price per calf.
$x + 4$ = hypothetical number of calves bought.
$\therefore \frac{80}{x+4}$ = " price of each calf.
But $\frac{80}{x} - 1$ also = " " " " "
$\therefore \frac{80}{x+4} = \frac{80}{x} - 1 = \frac{80 - x}{x}$
$\therefore 80x = -x^2 + 76x + 320$
$\therefore x^2 + 4x - 320 = 0$
$(x + 20)(x - 16) = 0$
$\therefore x + 20 = 0$ and
$x - 16 = 0$
$\therefore x = 16$ or -20. Ans. 16.

The minus value (—20) is inadmissible; *but what does it signify?*

Let us conventionally assume that *buying* is a minus or negative kind of selling, and that less is a minus-'more,' and more a minus-'less,' and then in the original question (in 'order to satisfy the—20 value') change the above terms, forming a new but very closely related question as follows :—

(*b*) *A dealer* SOLD *a number of calves for £80. If each calf had* BROUGHT *him £1* MORE, *and he had* SOLD 4 LESS, *the price would have been the same. How many did he* SELL?

Let x in £ = number of calves sold.
Then $\frac{80}{x}$ = price per calf.
$x - 4$ = hypothetical number of calves.
$\frac{80}{x-4}$ = " price of each calf.
But $\frac{80}{x} + 1$ also = hypothetical price of each calf.
$\therefore \frac{80}{x-4} = \frac{80}{x} + 1 = \frac{80 + x}{x}$
$\therefore 80x = x^2 + 76x - 320$
$x^2 - 4x - 320 = 0$
$(x - 20)(x + 16) = 0$
$x = 20$ or -16. Ans. 20.

For Correspondence, see end of Certificate Article.

SCHOLARSHIP ROUTINE FOR FEBRUARY, 1892.

DAYS	FIRST WEEK				SECOND WEEK					THIRD WEEK					FOURTH WEEK				
	I.	II.	III.	English Composition	I.	II.	III.	Repetition, Literature, and Penmanship	Language	I.	II.	III.	English Composition	Language	I.	II.	III.	Science	Drawing
MONDAY	Cube Root of Algebra — Origin, Preparation, and selection of Clothing Materials	History from 1198 to 1327 A.D.	Language		Cube Root of Algebra — How to mend Textile Fabrics	Dates from 1198 to 1461 A.D.	Language			Fractional Simple Equations — Apportionment of Incomes	History from 1327 to 1461 A.D.	Language			G.C.M. and L.C.M of Algebra — Classes of Food	History from 1461 to 1602 A.D.	Language		
TUESDAY	Propositions XLI to XLVIII, of Euclid, Book I. — Practise Needlework	Map of Hindostan	Science		Propositions I to XXVI of Euclid, Book I. — Hedge-tear and Cross-cut Darns	Political Geography of United States	Science			Propositions XII to XIV of Euclid, Book II. — Paper Pattern of pair of Child's Drawers. Mensuration of the Circle	Map of United States	Science			Deductions of Euclid, Book II. — Flannel Sampler	Political Geography of Australia	Science		
WEDNESDAY	Theory of Arithmetical Rules	Paraphrasing	How to teach History		Clock Sums	Analysis and Parsing	How to give an Object Lesson			Exchange	Grammar from Text Book	Rewards and Punishments			Equation of Payments — Stocks	Prefixes	The Code Requirements of the Standards		
THURSDAY	Algebraic Factors — Pudding Recipes	Notes of a Lesson on *The Herring Fishery*	Division into Proportional Parts		Quadratic Equations — Broths and Soups	History from 1760 to 1800 A.D.	Stocks			Square Root of Algebra — Lighting, Ventilation, and Drainage	History from 1800 to 1830 A.D.	Area and Solid Content			Cube Root of Algebra — Disinfectants	Dates from 1760 to 1830 A.D.	Mensuration of the Circle — Theory of Arithmetical Rules		
FRIDAY	Deductions of Euclid, Book I. — Diagram of Chemise on sectional paper	Political Geography of United States	Greek and Teutonic Roots		Deductions of Euclid, Book I. — Knitting	Political Geography of Mexico and Central America	Syntax from Text Books			Propositions XXVII to XLVIII Euclid, Book III — Calico Sampler	Tides and Currents	Latin Roots			Deductions of Euclid, Book I. — Paper Pattern of a Child's Frock Bodice	Physical Geography of Australia	Affixes		
SATURDAY	Language	Science	Drawing	English Composition	Language	Science	Drawing	Repetition, Literature, and Penmanship		Language	Science	Drawing	English Composition		Language	Science	Drawing	Repetition, Literature, and Penmanship	

SELECTED GOVERNMENT QUESTIONS.

First Week.

1. Write a short essay on 'The use of Pictures in Teaching.

2. Analyse the following sentence, and parse the italicised words :—

'*When* Henry the *Eighth* attempted *to raise* a forced *loan* of unusual amount by proceedings of unusual rigour, the opposition *which* he encountered *was such as appalled even his* stubborn and *imperious* spirit.'

3. Draw a map of Ireland.

4. Explain the following terms: meridian of Greenwich, equatorial diameter, ecliptic, solstice, estuary, confluence, tropics, and plateau.

5. Describe briefly the courses of the Ganges and the Nile.

6. Give some account of the Soudan, Manitoba and Ceylon.

7. Say what use you think it right to make of tracing in teaching writing. Write in large hand the five capital letters: P, K, Q, M and W; and point out the commoner faults made by learners in forming them.

8. Explain the terms: Statute of Præmunire, Petition of Right, Five Mile Act, Habeas Corpus Act, and give an account of the second and fourth of these measures.

9. Compare the state of the English labourer in the 16th and 19th centuries.

10. Find by Practice the value of 73,360 articles at £5 14s. 3¾d. each. Ans. £419,208 5s. 0d.

11. If 20 horses and 196 sheep can be kept for 9 days for £7 15s. 0d., what sum will keep 15 horses and 72 sheep for 8 days, supposing 5 horses eat as much as 76 sheep? Ans. £4 2s. 8d.

12. A tax of 5d. in the £ is paid on a certain sum, and a further tax of 1½ per cent on the remainder. The sum now remaining is £31 2s. 9d. Find the original sum. Ans. £32 5s. $8\frac{44}{197}$d.

13. (*Men only.*) If a straight line fall on two parallel straight lines, it makes the alternate angles equal to one another. Show that the lines bisecting the alternate angles of an equilateral triangle will if produced form another equilateral triangle. What is the magnitude of this triangle compared with the original one?

(*Women only.*) What materials and appliances would be required for the teaching of needlework to Standards III. and IV; and what ought children in those Standards to be able to do in order to fulfil the requirements of the Code?

14. (*Men only.*) If two triangles have two sides of the one equal to two sides of the other, each to each, and have likewise their bases equal, the angle which is contained by the two sides of the one shall be equal to the angle contained by the two sides equal to them, of the other.

What is the converse of this proposition? Is it universally true?

(*Women only.*) Name the chief ingredients which can be made use of in the preparation of soup. Give two recipes for the making of cheap and nourishing soups.

15. (*Men only.*) The diagonals of a rhombus are 88 and 234 feet. Find the area, the length of a side, and the height of the rhombus.
Ans. 10,296 sq. ft. 125, 82·368 ft.

(*Women only.*) Draw out a week's table of expenditure for an artisan's family, consisting of himself, his wife and three children from 4 to 10 years of age, the father's earnings being 30s. per week.

16. (*Men only.*) Prove the rule for dividing one fraction by another. Simplify

$$\frac{x^3+2}{(x-2)^2\,2\,(x^2+1)} - \frac{4}{5(x-2)} - \frac{x+2}{5(x^2+1)}.$$

Ans. $\frac{x^3+2}{(x-2)^2\,(x^2+1)}$.

(*Women only.*) Show the importance of proper light and ventilation in Schools. What is needed in a school-room in order to secure these conditions? How would you obtain ventilation without draught?

17. (*Men only.*)
$$\left.\begin{aligned} \frac{3x+1}{7} - \frac{2x-y}{2} &= \frac{2y-x}{8} \\ \frac{4x-2}{3} - \frac{4y-5x}{2} &= \frac{x+y}{5} \end{aligned}\right\}$$

Ans. $x=2$; $y=3$.

Second Week.

1. Give several examples of words in which the following syllables are contained; and show in regard to each group what is the common element of meaning, and from what language the words are derived :—

phil, rect, dom, tele, sent, tact.

2. Write notes of a first lesson on adverbial sentences (or clauses).

3. Draw a map of Russia.

4. Enumerate the chief productions of British North America, Queensland, and Jamaica.

5. Describe a coasting voyage from Bordeaux to Naples, stopping at six important seaports on the way, and name the principal exports from each of these.

6. Draw the plan of a school-room, and show how it may be applied in the teaching of scale and proportion, in map drawing, to Scholars in the First Standard.

7. (*Girls only.*) Illustrate by diagrams, with suitable explanation, the teaching of plain sewing by the demonstration method.

8. Sketch briefly the character of Henry V., and give some account of his conquests in France.

9. What was the relationship of Mary I. to her husband, Philip of Spain; and of Mary Queen of Scots to her husband, Lord Darnley? Give in each case genealogical tables.

10. Divide a legacy of £345 10s. among three persons in the ratios of $\frac{2}{10}$, $\frac{3}{5}$, $\frac{1}{2}$. Ans. £134 7s. 2⅞d. / £115 3s. 4d. / £95 19s. 5⅛d.

State and explain the rule for working sums in Compound Proportion.

11. Find the annual rent of a house on which, after deducting 20 per cent., a rate of 3s. 1d. in the £ produces a sum of £38 17s.
Ans. £315.

12. Find in inches to three places of decimals the side of a square which contains 41·9 square feet. Ans. 77·676 in.

13. (*Men only.*) Prove by Euclid II. 4 that the square on the whole line is four times the square on half the line.

(*Women only.*) What is meant by the term plain needlework? Give a short description of the stitches, materials, and implements used in the making (by hand) of garments for 'underclothing.'

14. (*Men only.*) Write out Euclid II. 13, and comprise the two enunciations of II 12 and II. 13 in one.

(*Women only.*) Describe the different kinds of patching in common use.

15. (*Men only.*) The sides of a triangle are in the proportion of the numbers 7, 15 and 20; and the area is 2,226 square feet. Find the sides in feet. Ans. 50·96, 109·2, 145·6.

(*Women only*) What are the chief precautions to be observed in the selection of materials for clothing? Show, by a statement of particulars, what would be the probable cost of a suitable winter outfit for a pupil-teacher.

16. (*Men only.*) Simplify

$$\frac{a^3-b^3}{a^2+ab+b^2} - \tfrac{1}{3}\left\{a-3b-(3b-a)\right\}$$ Ans. $2b$.

(*Women only.*) '*It largely depends upon the teacher of a school whether the playground helps to promote or to injure the health of the children.*' Explain this statement, showing how you could make the playground most conducive to the health of your scholars.

17. (*Men only.*) Determine c and d so that in the product of x^2+x+1, and x^3+cx^2+dx+e, the coefficients of x^4 and x^3 may vanish. Ans. $c=-1$; $d=0$.

Third Week.

1. Name six of the most famous English writers, say when each of them lived, and what books he wrote.

2. Paraphrase the following :—

Hear me, recreant!
On thine allegiance, hear me!
Since thou hast sought to make us break our vow,
Which we durst never yet, and with strained pride
To come between our sentence and our power,
Which nor our nature nor our place can bear,
Our potency made good, take thy reward.

Five days we do allot thee, for provision
To shield thee from diseases of the world,
And on the sixth to turn thy hated back
Upon our kingdom; if on the tenth day following
Thy banished trunk be found in our dominions,
The moment is thy death. Away! By Jupiter,
This shall not be revoked.

3. Draw a map of Northern Africa.

4. Name and give the situation of the principal seaports, and the chief seats of manufacturing industry in the British Isles.

5. Describe the positions of Cyprus, St. Helena, Borneo, Barbadoes, and Vancouver's Island, and give a full description of one of these islands.

6. Define a sentence in grammar. Illustrate your definition by original examples of simple, complex and compound sentences relating to events in English History.

7. Give explanations of any unusual words or grammatical difficulties which are italicised in the following passage, in language suitable for Standards V. or VI :—

When red hath set the *beamless* sun,
Through heavy vapours dark and *dun*;
When the tired ploughman, dry and warm,
Hears, *half* asleep, the rising storm
Hurling the hail and *sleeted* rain
Against the casement's tinkling pane;
The *sounds* that drive wild deer and fox
To shelter in the *brake* and rocks,
Are *warnings* which the *shepherd* asks
To *distant* and to dangerous tasks.

8. Detail briefly the chief events of British History in the years 1688–89.

9. Write a short account of the Seven Years' War, and recite the principal provisions of the Peace of Paris.

10. What is a fraction? Describe and name its several parts, and explain why they are so called. Show that $1\frac{1}{5}$, $\frac{2}{3}$, $1\frac{8}{15}$, $\frac{4}{5}$ of $1\frac{1}{2}$ are all equal in value.

11. A wine merchant buys 500 gallons of brandy at 40s. per gallon, and 600 at 50s. per gallon. At what price should he sell them, mixed together, to make a gain of £10 per cent.?

Ans. £2 10s.

12. The wages of 27 men amount to £60 15s. in 18 days. How many days must 76 boys work to earn £253½, the daily wages of the latter being $\frac{2}{3}$ the daily wages of the former?

Ans. 40 days.

13. (*Men only.*) From a given point draw a straight line equal to a given straight line. Draw the figure when the point is in the given line produced.

(*Women only.*) State fully the needlework requirements of the Code for female pupil-teachers of the fourth year. Describe the method of cutting-out and putting together a child's pinafore, showing what stitches would be required.

14. (*Men only.*) Write out Euclid II. 12, and give the corresponding Algebraic form.

(*Women only.*) Name and describe some of the common washing-machines in use. What articles must always be washed by hand, and what without soap; and why?

15. (*Men only.*) The chord of a sector is 6 inches, the radius is 9 inches. Find the area of the sector.

Ans. 27·53 sq. inches.

(*Women only.*) What constituents of our food go to sustain the warmth of the body? Explain the process, and name some kinds of food specially adapted for this purpose. What is the normal temperature of the human body?

16. (*Men only.*) Show that the L.C.M. of two algebraical expressions is their product divided by their G.C.M. Find the G.C.M. and L.C.M of $6a^3 - 5a^2x - 6ax^2$; $4a^3x - 12a^2x^2 + 9ax^3$; and $6a^2x - 13ax^2 + 6x^3$.

Ans. $2a - 3x$; and $ax\,(2a - 3x)^2\,(3a + 2x)\,(3a - 2x)$.

(*Women only.*) Describe the method to be adopted in washing a pair of blankets.

17. (*Men only.*) The accounts of a school showed a debt which was paid off by three managers, *A*, *B* and *C*. *A* paid half the debt and £2 more; *B* paid half the remainder and £7 more; *C* paid half of what then remained and £8 more. What did each pay?

Ans. £50; £30; £16.

Fourth Week.

1. Distinguish common, proper, and abstract Nouns; cardinal and ordinal Numbers; intransitive and transitive Verbs; copulative, factitive, and prolative Verbs; continuative and disjunctive Conjunctions; reflexive and emphatic Pronouns; possessive Pronouns, and Pronouns in the possessive case.

2. It is often said that English is less of an *inflected* language in its later than in its earlier stages. Explain what is meant by this, and give a few instances of inflection in English as now spoken.

3. Draw a map of Western Australia.

4. Name the mountains in which the Rhine, Volga, Mississippi, Amazon, Indus, Lena, and Niger rise, the seas into which they flow, and a few of the principal cities on the banks of the first four named.

5. Give a full description of the North Pacific Ocean.

6. Write full notes of a lesson on 'Animals of the Cat kind.'

7. Detail some of the advantages and disadvantages of teaching Reading by the Alphabetic method.

8. Give a comparative statement of the population of England in the reign of Queen Elizabeth, in 1800, and in 1892. Detail some of the causes which have led to the rapid growth of population in the present century.

9. Explain the terms: Alderman, Magna Carta, Feudal System, Viceroy, Lord Lieutenant, Justice in Eyre.

10. A person invests in the Three per Cents. so as to obtain interest at the rate of £2 19s. $3\frac{81}{809}$d. per cent. per annum. Find the price of the stock.

Ans. 101¼.

11. What is meant by profit and loss per cent.? A grocer bought 1 cwt. of hams for £2 12s. 6d., and sold them at the rate of 7d. per lb.; and also 1 cwt. of soap for £2 6s. 8d., and sold it at the rate of 6½d. per lb. Compare the profit per cwt. of the two transactions, and state in each case the percentage of gain.

Ans. 12s. 10d.; 11s. 8d.; £24 8s. 10⅔d.; £25.

12. Give illustrations of the statement, 'If a number measure two other numbers, it also measures their difference.' Make a diagram showing that $\frac{1}{2} + \frac{1}{3} - \frac{1}{4} = \frac{7}{12}$.

13. (*Men only.*) If a side of any triangle be produced, the exterior angle is equal to the two interior and opposite angles. What is the size of the angle of a regular pentagon?

(*Women only.*) Give directions suitable to a class of younger children for (*a*) sewing on a string, (*b*) sewing on a button, (*c*) knitting a pair of plain muffatees (two needles).

14. (*Men only.*) Write out Euclid II. 11, and show its connection with the extraction of the square root of five.

(*Women only.*) Name and describe the early symptoms of some of the most common contagious and infectious diseases. What are the cheapest and most efficacious disinfectants?

15. (*Men only.*) A rectangle is 8 feet long and 7 feet broad. Find the area of the circle which has the same perimeter.

Ans. 71·62 sq. feet.

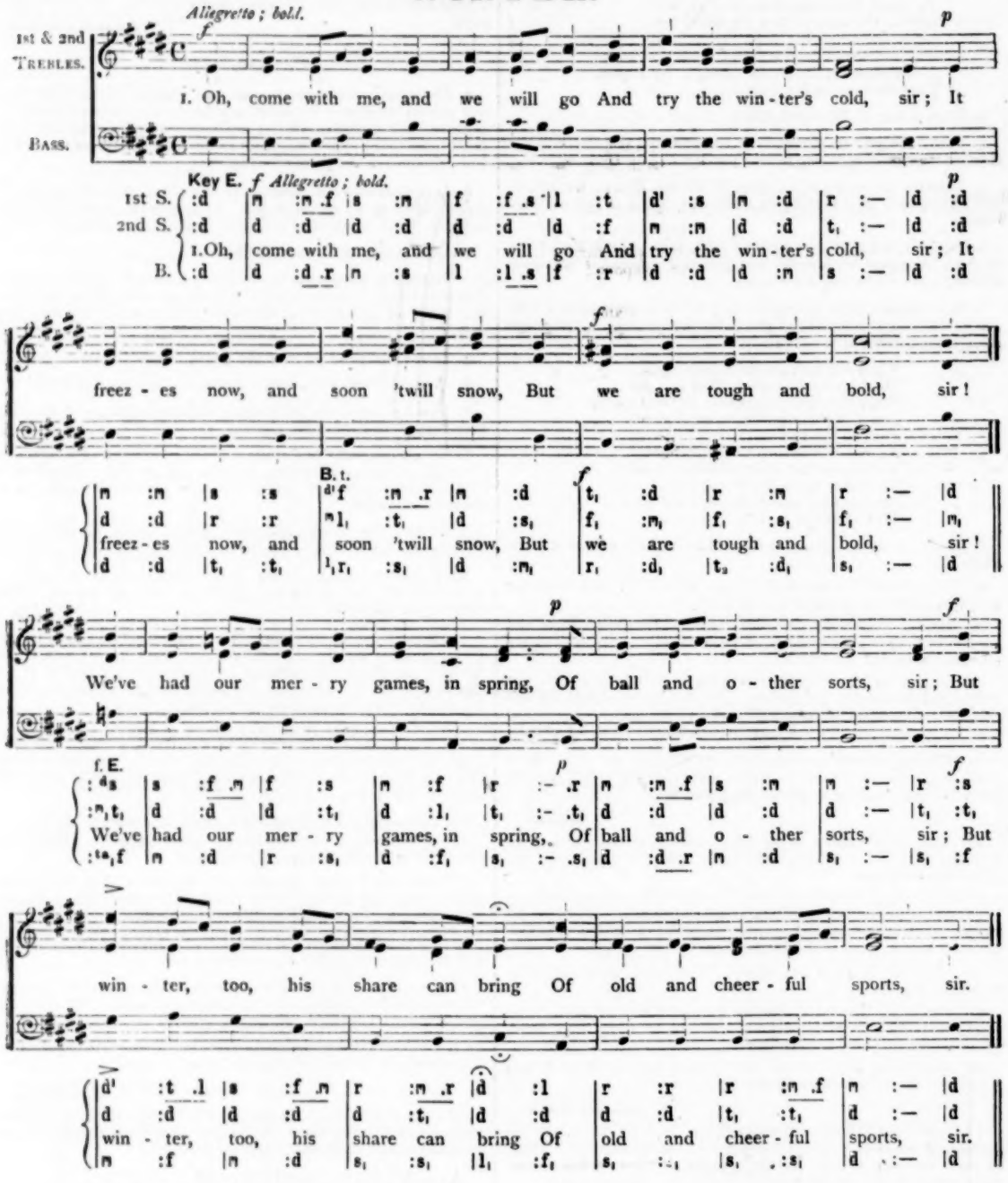
(*Women only.*) Which is the most important of the condiments generally in use, and why? Name and describe some other common condiments, and show what purposes they serve.

16. (*Men only.*) Simplify $\dfrac{3x - 4y}{4x + 5y} - \dfrac{4x - 5y}{5x + 6y} + \dfrac{1}{20}$.

Ans. $\dfrac{y\,(9x + 50)}{20\,(4x + 5y)\,(5x + 6y)}$

(*Women only.*) Explain how you would make (*a*) barley-water and (*b*) beef-tea.

17. (*Men only.*) $\left.\begin{aligned} \frac{11x}{9} &= y - 2 \\ \frac{x}{3} - \frac{y}{13} &= 2 \end{aligned}\right\}$ Ans. $x = 9$; $y = 13$.

WINTER.

Allegretto ; bold.
1st & 2nd TREBLES.
BASS.
1. Oh, come with me, and we will go And try the win-ter's cold, sir; It
freez-es now, and soon 'twill snow, But we are tough and bold, sir!
We've had our mer-ry games, in spring, Of ball and o-ther sorts, sir; But
win-ter, too, his share can bring Of old and cheer-ful sports, sir.
Key E. f Allegretto ; bold.
1st S.
2nd S.
B.
1.Oh, come with me, and we will go And try the win-ter's cold, sir; It
freez-es now, and soon 'twill snow, But
We've had our mer-ry games, in spring, Of ball and o-ther sorts, sir; But
win-ter, too, his share can bring Of old and cheer-ful sports, sir.

2. With sled and satchel off we start—
The smoking breakfast through, sir—
And through the day, with book and chart,
We have enough to do, sir;
But when our daily lesson's done,
Oh, then we're on the ice, sir;
And, by the redly sinking sun,
We're skating it so nice, sir.

3. Then come with me, and we will go,
And try the winter's cold, sir;
Nor fear the ice, nor fear the snow,
For we are tough and bold, sir:
And then at evening, sitting round
The crackling, cheerful blaze, sir,
We tell our stories, sing our songs,
And close the winter day, sir.

PUPIL TEACHERS' COURSE.

1. By this time even the most procrastinating Pupil Teacher, whose examination is in April, will have commenced to bestir himself. Such a one, unless exceptionally clever, may even now be too late. The Education Department is thoroughly determined to weed out the incapable, the inert, and the idle, and to insist upon the Pupil Teacher being much more thoroughly equipped than he has been heretofore.

The number of failures at the two ends of the term of apprenticeship, viz., at the Scholarship and 'Candidates'' examinations, is abnormal, and gives emphatic proof of the Department's earnestness.

2. In the great majority of schools no special training is given in School Management. A text-book, perhaps a very good one, is placed in the Pupil Teacher's hands; he is instructed to read it; he is exhorted to compare its *dicta* with what his own experience teaches, and there the matter ends.

In such cases it is especially incumbent upon the neglected one to look out for himself, and to study most carefully and critically the model answers on School Management that appear from time to time in this journal.

3. The study of past questions is indeed most valuable. We once knew a man who passed the London Matriculation and 'The First B.A.' (as it was then called) by simply working up all the old questions he could lay his hands upon. He failed afterwards five times in the final, and has abandoned all attempt to obtain a degree.

But this instance is most suggestive, as showing both the great service that may be made of old questions, and also the inevitable failure resulting from the abuse of a really useful practice.

Moreover, in methods of working, manner of arrangement, style of condensing or elaboration, model answers furnish *wrinkles* that no text-book can within its limits afford to give.

Once more, however, beware of relying solely upon any collection of questions no matter how comprehensive.

4. Our Girl Pupil Teachers should from the beginning not neglect Domestic Economy. Undoubtedly the BEST book ever issued on this wide subject is *Hughes's Domestic Economy*. It is certain that the questions given at the Scholarship, even if not so difficult in detail as those at the two Certificate Examinations, cover quite as much ground. Their area is as great, but their depth is less. This subject cannot be well mastered in the Fourth Year only.

5. It cannot be too often repeated or too emphatically stated that the Town Teacher of the future will have to be a Graduate. Without a degree, promotion will be very precarious; and this distinction cannot be obtained without a knowledge of two or three languages. To learn the forms of a language, to 'grind away' (say) at a Greek Verb after attaining maturity, to tax the memory when the reasoning powers would prefer to be exerted, is nauseating work.

'Twill save you from a thousand cares to learn a language young.

In the matter of drawing—there are now hundreds of grey-headed teachers (with whom the State has broken faith as regards pensions) straining their aged eyes over the drawing-board in order so to qualify themselves as to preserve their scanty pittance.

Young eyes, retentive memories, lithe fingers, exert yourselves NOW!

6. The days of 'rule of thumb' are past, the time of intelligence, of breadth of comprehension, of capacity of initiation are close at hand.

Our readers must understand the reason of processes as in Arithmetic; must be able to unite fact with fact in due relation and sequence, as in History; must possess the power of creating mental pictures, as in realising the 'relief' of a country in Geography; must be prepared to face emergencies, as in School Management problems.

No Pupil Teacher whose heart is not in his work should continue in the profession, for the future demands from him the fullest preparation, the most burning zeal, the most untiring industry, and the most subtle tact.

A FEW SUITABLE QUESTIONS.

FIRST YEAR.

1. *Boys.*—A book containing 218 leaves is 1·295 inches thick. Allowing ·08 inch for the thickness of the cover, find to 6 decimal places the thickness of the paper. Ans. ·005206.

Girls.—Find by practice the weight of 76 articles, each 3 tons 27 lbs. 13 ozs. Ans. 228 tons 18 cwt. 3 qrs. 13 lbs. 12 ozs.

2. In how many ways can division be regarded? In exact division what is the relationship between the three terms?

3. Write in large hand '*Categorically.*'

Write in small hand '*He was hugely gratified by the compliment.*'

4. Analyse the following passage and parse the italicised words.

'*Thee* the voice, the *dance obey*
Tempered to *thy* warbled lay,
O'er Idalia's velvet *green*
The rosy-crownèd Loves *are seen*
On Cytherea's day,
With antic Sport and *blue-eyed* pleasures
Frisking light in frolic measures.'

5. Write an essay upon the development of Australia.

6. Define *inflection*, *conjugation*, *syntax* and *accidence*.

7. Describe a journey from Montreal to New Westminster.

8. Enumerate the colonies of Australia, giving their chief towns, and describing their climates and productions.

9. What were the prevailing religions in Britain from B.C. 55 to 800 A.D?

10. Mention any year when the following persons were alive:—Ostorius Scapula, Allectus, King Arthur, Ida, Constantine of Scotland, and Eustace of Boulogne.

SECOND YEAR.

1. *Boys.*—After spending £30 more than $\frac{1}{7}$ of my income, I have £70 more than 66⅔ per cent. of it left. Find my income. Ans. £450.

Girls.—Reduce to a decimal $\frac{3\frac{1}{2} - 1\frac{3}{4} \text{ of } 1\frac{3}{5}}{3\frac{1}{2} + 1\frac{3}{4}}$. Ans. ·1$\dot{1}$.

2. Define *repeating*, *circulating*, *recurring*, *non-terminating decimals*. In how many ways may a vulgar fraction be regarded?

3. *Writing* as in First Year.

4. Describe in words the course of the Rhine *or* the Danube.

5. Enumerate, giving the areas, population, and chief towns, the protected states of India.

6. Draw a map of the coast line of Europe from the Loire to Marseilles.

7. Paraphrase the following:—

Far up the lengthening lake *were spied*
Four *darkening* specks upon the tide,
That, slow *enlarging* on the view,
Four manned and masted barges *grew*,
And bearing *downwards* from Glengyle
Steered *full* upon the opening isle.

PUPIL TEACHERS' ROUTINE FOR FEBRUARY.

DAYS	YEARS	FIRST WEEK			SECOND WEEK			THIRD WEEK			FOURTH WEEK		
		1st Lesson	2nd Lesson	3rd Lesson	1st Lesson	2nd Lesson	3rd Lesson	1st Lesson	2nd Lesson	3rd Lesson	1st Lesson	2nd Lesson	3rd Lesson
Monday	1	Analysis and Parsing	How to teach Reading	Div. of Decimals. Simple Practice	Analysis and Parsing	How to teach Writing	Map of Chief British Rivers	Analysis and Parsing	How to teach Arithmetic	Physical Geog. of Mountains and Rivers	Composition or Paraphrasing	Lives of great Men	Geography of England
	2			Stocks. Reduc. of Vulgar Fractions			Map of Spanish Peninsula			Latitude and Longitude			Climates of British Empire
	3		How to give an Object Lesson	Mens. of Parallelograms. Theory of required rules		Notes of an Arithmetic Lesson	Map of Mediterranean Sea		Notes of a Lesson on Form	Winds and Ocean Currents			Geography of Africa
Tuesday	1	Euclid I., 9. Knitting Sock	Literature, Repetition, and Writing	Scripture or Revision	Euc. I., 10, 11. Paper Patterns of Garments	Composition or Paraphrasing	Scripture or Revision	Euclid I., 12. Practise Stitches	English from Text Book	Scripture, or Revision	Euclid I., 13. Practise Stitches	Literature Repetition and Writing	Scripture or Revision
	2	Euclid I., 15, 16. Any Needlework			Euclid I., 17, 19. Flannel Patch			Euc. I., 23, 26. Practise Stitches			Euclid Revision. Practise Stitches		
	3	Euc. I., 46, 47. Cross Cut Darn			Euc. I., 47, 48. Any Needlework			Euclid Deductions. Any Needlework			Euclid Deductions. Any Needlework		
Wednesday	1	Dates from 1035 to 1066 A.D.	Div. of Algebra. Practice Stitches	Any Advanced Work	History from Canute to the Confessor	Any Revision	Any Advanced Work	History from 1042 to 1066 A.D.	Multiplication of Algebra. Knitting Sock	Any Advanced Work	Anglo-Saxon Literature and Remains	Division of Algebra. Any Geography	Any Advanced Work
	2	History from 1461 to 1478 A.D.	G.C.M. of Algebra. Practice Stitches		Dates from 1422 to 1478 A.D.			History from 1478 to 1485 A.D.	Revise Euclid. Knitting Stocking		Revise Literature from 1066 to 1485 A.D.	Division of Algebra. Any Geography	
	3	History from 1649 to 1688 A.D.	Problems in Algebra. Any Needlework		Lives of Great Men			Literature from Elizabeth to James II.	Revise Euclid. Cross-Cut Darns		Revise Dates	Any Mensuration. Any Needlework	
Thursday	1	Geography of Ireland	English from Text Book	Div. of Algebra. Stocking-hole mending	Geography of Ireland	Literature, Repetition, and Writing	Revise Da'es	Geography of Ireland	Prefixes, Roots, or Affixes	Circulat. Decimals, Problems in Vulgar Fractions	Geography of British North America	Miscellaneous Arithmetic	Map of Irish Sea
	2	Geography of India		Euc. I., 20, 23. Print Patch	Productions of British Empire			Geography of India		Any Vulg. Fractions, Miscellaneous Problems	Geography of India		Map of Italy
	3	Geography of Asia		Revision of Euclid. Hedge-tear Darns	Geography of Asia			Geography of Africa		Miscellaneous Problems	Geography of Asia		Map of South Africa
Friday	1	Div. of Decimals Easy Multip. of Vulgar Fractions	Any Advanced Work	Any Advanced Work	Decimals of Money. Simple Proportions	Any Advanced Work	Any Advanced Work	Dec. of Weights & Measures. Probs. in Vulgar Fractions	Any Advanced Work	Any Advanced Work	Any Decimal Fractions Misc. Problems	Any Advanced Work	Any Advanced Work
	2	Stocks. Money Decimals			Com. Proportion. Reduc. of Decimal Fractions			Com. Proportion Vulgar Fractions of Weights			Miscellaneous Problems		
	3	Mens. of Parallelograms. Proofs of the required rules			Miscel. Problems			Miscellaneous Problems			Geography of Australia		
Saturday	1	Language	Science	Drawing	Music	Language	Science	Drawing	Music	Language	Science	Drawing	Music	Language	Science	Drawing	Music
	2																
	3																

8. Analyse the above passage, and parse the italicised words.

9. Write out a short life of Richard I., *or* of Thomas a'Becket.

10. Draw up a genealogical table exposing the injustice of Edward III.'s claim to the French throne.

11. How would you teach spelling? Write down twelve words presenting typical difficulties of Orthography.

12. Give the Past Definite Tense of *Punir*, *or* write out a few rules for the Gender of Latin nouns.

13. *Boys.*—Write out Euclid I. 5, and also the enunciation of I. 12 from memory.

Girls.—What are the special faults to be guarded against in knitting a stocking?

THIRD YEAR.

1. *Boys.*—Find the cost of papering a room 28ft. 6in. long, 18ft. 9in. broad, and 12ft. high, with paper 1ft. 9in. wide, at 2s. 6d. per yard. Ans. £27.

Girls.—Express the difference between $\cdot\dot{3}\dot{7}\dot{8}$ of 13s. 10½d. and $\cdot\dot{3}\dot{7}\dot{8}$ of 16s. 6d. as the decimal of ·426 of £1 17s. 6d. Ans. ·0625.

2. *Boys.*—A clock set to correct time at 8 o'clock on Monday morning is found to have gained 3min. 20sec. at 5 o'clock (true time) on Tuesday afternoon. What will be the correct time when it strikes 11 on Sunday morning? Ans. 45min. 10$\frac{10}{17}$sec. past 10.

Girls.—A person buys equal quantities of oranges at two and three a penny respectively, and then mixes them. How many must he sell for 5s. so as neither to gain nor lose? Ans. 144.

3. *Writing* as in First Year.

4. What is the force of these prefixes:—'*be-*,' '*for-*,' '*mis-*,' '*un-*,' '*amphi-*,' '*anti-*,' '*cata-*,' *and* '*hemi-*'? Give words, with their meanings, in which they occur.

5. Give examples of the various ways in which the subject of a sentence may be expanded.

6. Paraphrase the following:—

O! never in our sunny days
Know we the worth of woman's ways,
Content to use her as a toy
That's only fit for scenes of joy.
But when in Sorrow's deepest pain,
When shower our tears as wintry rain,
Or when in darkest, blackest woe
The sullen tears refuse to flow,
She, only she, knows how to bless,
To soothe the heart with dear caress.

7. Draw a map of Africa, marking in the different European possessions.

8. Enumerate the principal divisions of China with their chief towns, and also the principal islands of Asia, south of 20° N. latitude.

9. What are the productions of Siberia? How are they forwarded to Europe?

10. Write a short life of Oliver Cromwell.

11. Give dates for 'The Field of the Cloth of Gold,' Sir Thomas Wyett's Insurrection, Sir Francis Drake's Voyage round the World, the Colonisation of Ulster, Abolition of 'The Star Chamber,' and the Capture of Jamaica.

12. Describe the Unitary Method of working 'Proportion Problems.' What are its advantages and disadvantages?

13. Give the conditional mood of *savoir*, *or* the present tenses of the Indicative and Subjunctive Moods of *Audior*.

14. *Boys.*—Write out from memory, Euclid I. 27. If the three middle points of the sides of a triangle be joined, the interior triangle thus formed is one-fourth of the original triangle.

Girls.—Give the measurements for a frock bodice for a child 10 years old. How would you economise the material?

15. *Boys.*—Prove the rule for finding the G.C.M. of a number, and find the L.C.M. of $a^2 + ab + b^2$; $a^2 - b^2$; and $a^2 - ab + b^2$. Ans. $a^6 - b^6$.

Girls.—Enumerate, with prices the chief utensils required for artisan cookery.

16. *Boys.*—The side of an equilateral triangle is $2x$. Find the length of the shorter side of a rectangle of equal area, whose larger side is $x\sqrt{3}$. Ans. x.

N.B.—For Fourth Year Questions see Scholarship Article.

For Answers to Correspondents see end of Certificate Article.

NOTES AND NOTIONS.

BY J. H. YOXALL.

II.

'THE State does not provide for manual instruction in anything but manslaughter,' said Pestalozzi bitterly, as he watched the troops in training for the *Tir Nationale*, and saw the artisan grow up incult and rule-of-thumbish. But nowadays that reproach is wiped away; even England, slowest and most bovine of nations in matters educational, can boast a few Technical schools, a great many Technical Education Committees, and three or four systems of manual training. We don't do the thing yet so well as the Germans do it, for in England we attempt to make zeal do the work of discretion—a thing impossible, of course. Technical teaching, in one form or another, is now quite the rage amongst us; but it is rather 'the rage of the heathen' than 'divine *furor*' of the earnest instructed educationist. The probability is that twenty years hence the English arrangements for manual instruction and the like will need to be overhauled and partly nullified, just as much as Mr. Lowe's precious Code invention has required it. For our efforts are sporadic, disconnected, and almost without plan. In England we are eternally working from practice towards theory—the cart before the horse.

* * * * *

Too independent to learn from others, too proud to copy, too poor (save the mark!), to spend the wise amount of money, too unsystematic to spend the wise amount of money at the right time and place, our vaunted insular independence is leading us wrong again. When John Bull rushes at anything in the way of education, he seems inevitably to display the cool calculating foresight of the bull that charges a stone wall.

* * * * *

A KEEN and witty Frenchman once compared the growth of English education to the growth of the Underground Railway. 'First they made a line from A to B,' said he; 'then they made a line from C to D; then from E to F; and thus from G to Z. And when they had got all these disconnected scraps of railway, then and not till then did they begin to think of co-ordinating and joining them with pieces from B to C and D to E, etc. Just in the same way these delightfully illogical English are building up a system of national education.'

The parallel is not unfair. What co-ordination is there, for instance, between the Board School and the University, the School of Art and the Manual Training Classes, the travelling dairy and the 'academy' for girls? Mere 'scraps of railway' again!

* * * * *

WORST of all, perhaps, is the mistake of grafting manual instruction upon schools where the ordinary, essential, foundation subjects are not sufficiently well-taught. No one will pretend that in the average and typical English school, whether primary or secondary, the ordinary school-subjects are taught in a way to leave nothing to be desired. Whether Greek or English, mathematics or history, be the curriculum is perhaps unimportant: the essential thing is to teach them educatively. It matters little *what* we teach; but it matters everything *how* we teach. And yet the

what is assuming so much importance in our system that the *how* runs a risk of being crowded out altogether.

* * * * *

THUS in some schools the teacher is henceforward to instruct in the art and mystery of straw-plaiting! In others, flower-culture is to be a time-tabled theme. Elsewhere, fruit-farming and egg-hatching are to have their day. Verily

Our little systems have their day,
They have their day, and cease to be.

Shorthand, no doubt, is a valuable item of general knowledge, but longhand (so long as longhand exists) ought to be well taught first; and the sweet reasonableness of forty-odd systems of stenography existing, scarce a one of them legible to the professor of another system, is surely visible to the naked eye.

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THE passion for 'new subjects and plenty of 'em' is producing strange results. What shall we think of a Quakers' school that flings aside a century of tradition and distaste for music-teaching, and orders pianos by the score? Nay, what shall be said in presence of a greater phenomenon—the introduction of the dancing-master and his kit into Scottish public schools? Solid geometry and drawing from the cast are taught to 'flaxen-headed ploughboys' who have but a veneer acquaintance with the trinity of R's, and girls are to learn laundry work who could not infallibly tot up a washing-bill. Amidst all these the chisel and saw of manual training cleave their widening way; and how shall the puzzled teacher find time to 'throughly purge' the ordinary pupil of errors in what the pupil terms 'readin' 'ritin' an' 'rithmetic,' and of the idea that Australia is too big to be an island, or that 'a sentence is summat to eat.' It is plain that the scholar will become Jack of all subjects and master of none, unless a Code, or Act of Parliament, or something of that kind is introduced to radically alter the mental and physical composition of what Mr. Chadband called a 'human boy.'

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IF we turn from the commercial and worldly side of this question to the ethical side of it, we find that multiplication of school subjects tends to deprive the teacher of opportunities to instil what even semi-barbaric Persians used to think a cardinal element of education—I mean the habit of speaking the truth, and all which that represents. And yet the multiplication of subjects on the morals side of education goes on merrily, too; and the idea that nothing can be well-taught unless it be syllabused and examined is working mischief in this department also. To codify and syllabus and examine and report on certain ethical subjects is to clutch the butterfly, brush the rainbow dust from its wings, and kill it—in order to pin it and catalogue it, and exhibit it in a case.

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TAKE the question of temperance teaching. The London School Board has been discussing the propriety of asking the Department to make temperance teaching a Code subject. A certain newspaper by misprint reported this as an attempt to make temperance a Code *suicide*. 'I thank thee for that word.' I am all in favour of temperance teaching when it comes spontaneously from a teacher's heart, and it does that in most cases already. But I am all against temperance teaching if it is to be made a 'Code suicide.' Suicide is just the word: multiplication of syllabused, examined, and paid-for-by-the-inch class subjects means the suicide of education, if not of the educator. When, ah when, shall the teacher get his hands unbound, and be free to teach the essentials thoroughly, to train the future man or woman in the habit of 'plain living and high thinking,' to sharpen the child's mental tools, and teach him how to use them, to induce in him that love of books and delight in industry which would cause him to 'get wisdom and understanding' and so 'be in school all life!' The result of want of freedom to do all this is seen in the fact that the average 'hobbledehoy, neither man nor boy,' has to be bribed to step inside an evening school.

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'GAMA,' a correspondent from 'the sweet shire of Cardigan,' sends me a query as to the pay of teachers in the elementary schools of New South Wales. Gama, like too many other teachers, evicted and disgusted, is turning his eyes towards a possible Eldorado outside his mother-land. Runciman—the finest pen that our profession has produced—had dozens of such queries to deal with when he was writing the answers to correspondents in a certain family weekly paper; Gama's question is typical. Well, I find that in New South Wales the pay in question is much as follows:—

1. Headmasters from £128 to £500 and a residence.
2. Headmistresses „ £218 to £236 „
3. Assistant Masters from £108 to £250.
4. Assistant Mistresses „ £100 to £168.

But, friend Gama, before you take that steerage-ticket or emigrant-passage to which a fond and generous country compels you, consider the cost of living in New South Wales. According to Mulhall (that prince of statisticians), the unit of daily expenditure in the United Kingdom is 20·8 pence; in New South Wales it is 30 pence. That means that a teacher with £80 a year in England, is quite as 'well-off' as the teacher with £120 in the colony. And then there is the great risk of not being permitted to teach there when you land. Nay, 'Old England for me,' as the pupil-teacher said when she landed in Liverpool, after a stormy passage from the Isle of Man.

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A TRULY 'burning' question in school-building is, 'What is the best mode of warming a school?' Hot pipes are said to dry the atmosphere and tend towards teachers'-sore-throat; open fires are said to be wasteful and ineffectual; the third course is the slow-combustion stove. An inspector of schools has recently been delivering his opinion on the matter, and it is a treat to find him delivering it in humorous style. Too few of his cloth possess that 'salt of the mind,' humour—or even good humour, for the matter of that. But this particular inspector both wisely and wittily said—'With the open kind of grate a large part of the heat goes up the chimney to warm the wintry sky, while the children at the further end of the room, under the window, sit shivering with cold. Schoolrooms would be warmer if a grant were paid on the weight of a child on leaving school. The wasteful grates should be replaced by a stove.' . . The position of the stove was also most material, and in one case, where the stove was at the side of the room, the schoolmaster solemnly told him that he had to 'turn the

boys every morning, like a huge joint.' No doubt, where possible, the stove should be in the middle of the room; but the necessary desk arrangement often precludes that position.

* * * * *

ANOTHER class of school-inspectors too often display the unconscious humour which is born of ignorance of their subject. The ex-infantry officer, who never even drew the line of an entrenchment, and who can only draw a cheque or a cork, can hardly help but be funny as an inspector of art. Not long ago such a one visited an art class at a school, to preside during an examination in 'Still Life' drawing. He found the students all ready and arrayed, and almost as still as the bunch of carrots, the vase, and the melon that reclined on a board in the midst of them. 'Yes, yes, very good,' said he, 'but, Mr. Teacher, you can't begin —*where is the still life?*'

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WHAT is this? *What* is this? 'The Boston School Board have unanimously decided that after every ninth year of service in the schools of the Board each teacher shall be entitled to one year's leave of absence on half-pay.' Surely 'mine eyes are made the fools of my other senses!' Yet no; there it is, in unmistakable print. Happy teachers by the Wash: happy dwellers in Lincolnshire. A year's holiday on half pay! But stop; is there a School Board at Boston? Alas, it is Boston, U.S.A., it is the 'Yankee school marms' that will enjoy their year of Continental travel, not the English Bostonians, after all. I am afraid that the average Lincolnshire School Board member would have a fit at the mere mention of such a proposal. Friend Gama, emigrate to New England at once.

* * * * *

ON the other hand, we in Old England are a little better off than some of our Continental congeners; there are some things which they do *not* 'manage better in France.' In England the Rural Dean and the rural teacher do not always agree, but neither do they come to fisticuffs. In France, however, friction between the cleric and the teacher now and again makes one of them 'see sparks.' Only the other day a rector in the *Midi* thought he had reason to complain of the unpunctuality of the school-children at his catechism class. The schoolmaster pooh-poohed the plaint, and the rector promptly hit him on the 'deaf ear' and knocked him down. We are not quite so bad as that at present; even the parson who from the pulpit denounced the N.U.T. as 'a Dockers' Union,' would scarcely play Heenan to the teacher's Tom Sayers. We are not 'so strenuous' here.

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MNEMONIC rhymes as a mode of teaching are sometimes good, but more often they are particularly bad. Here is one from a new book of what the French call the 'Vulgarised Science' order:—

The cheesemite, scorpion, and the spider
Do form the tribe of Arachnida.

After that it is not surprising to find the author writing of 'evening *soirées*.' I suppose an 'evening *soirée*' would be what the immortal Samivel called a 'leg of mutton and trimmings' *for supper*.

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Communications to hand from Gama and D. S. L.

TACT

IN THE BUSINESS OF SCHOOL-KEEPING.

BY RICHARD BALCHIN.

IN the January number of this magazine I indicated the manner in which I propose to treat this subject. We will consider, in the first place, 'Tact in the management of boys.' And here, let it be understood, I am referring to characters that require special management.' Ordinary lads, who form the majority in any class, call for no special treatment, and present no difficulty to the teacher. It is the *few*, with more or less prominent features, who furnish the test of the teacher's ability. The fertility of resource shown in dealing with these special characters, without continually appealing to the Head for help, is a fair index of the teacher's power.

In our public schools there are two personal influences exerting themselves in the education of the scholars. There is, first, the influence of the assistant who has charge of the class. This is direct, very personal, and powerful. There is, secondly, the influence of the Head. This is indirect, less personal in proportion as the school is larger, but may, and should be, very powerful.

Now with respect to the first of these influences' I deeply regret, nay, I think it nothing less than a national calamity, that the well-tried and able assistant should have his power for good, curtailed, cramped, and almost destroyed, through his inability to inflict that amount of corporal punishment which is a positive educative necessity, in the case of exceptionally constituted boys. It is really monstrous in its iniquity, that just at the point where it is absolutely necessary that the assistant should make his own personal influence over unruly lads felt, he should have to call in the personality of the Head, who is, in all probability, quite an outsider in respect to the many little side issues of the case to be dealt with. Cannot our leaders see that every time an assistant takes this course, his own power as an educator is lessened, and so at length, in despair and disgust, he is sorely tempted to give up all attempts at truly educating his boys, and to smother up all nobler aims, contenting himself with becoming a mere preparer for examinations? However, our employers have framed certain regulations, and we are all bound by the present necessities of the case, no less than by our honour as gentlemen, and our manifest duty to those in whose service we have voluntarily entered, to honestly adhere to the rules laid down, patiently awaiting better times. I will therefore assume that the assistant, in his dealings with the various types of boys described in these articles, will strictly adhere to the rules and regulations of his employers in the unfortunate position in which he is placed, and that he will appeal to the Head for help as seldom as possible, knowing that every time he does so, he exposes before the boys the weakness of that position.

The first of our 'types' which calls for special management is—

'The boy of perpetual motion.'

The assistant will often be brought into contact with the mother of this interesting production ; for she also is a being of perpetual motion, especially with the tongue. A bright-eyed, active, rather good-looking little woman with a large family, she comes in, looking as fierce as a young eagle; but with the display of a little tact on the part of the teacher, she will depart cooing gently like a dove. One such interview is sufficient to convince us that the boy is not to be greatly blamed, still less harshly treated, for the nature which is in him—he has but inherited it. Still he is a 'difficulty' in the class. Round-headed, bright-eyed, often red haired and closely cropped, an under-sized fellow, he can by no possibility keep still. You may get him to sit straight, square, and orderly at the beginning of your lesson, but before you have completed half a dozen sentences, especially if the subject is elementary science with some experiments, he will begin to fidget; his wretched little revolving seat will creak as he stands up, leans over the desk, shows intense interest in what is going on, his fiery eyes ready to start out of their sockets with the terrible brain-activity going on behind them ; and at length he blazes up into a conflagration, darts out his hand and wants to ask about a dozen questions, which, if you stopped to answer, would carry you over about half a dozen sciences.

This manifestation of character is, however, not undesirable, and of course need not be checked, still less censured. But there are other ways in which this disturbing element makes its presence felt. 'Please, sir, Tommy Wrigley has jolted my arm and made this blot on my copy book.' 'Please sir, Wrigley keeps jumping about and shaking the desk. I can't do my drawing.' Wrigley has been fidgetting about with the ink-well, and finally upsets it over his reading book. Wrigley invariably wants to 'leave the room' at the most critical point in a grammar lesson. Now Wrigley possesses what Alexander Bain calls, the 'active temperament.' 'This activity,' says Bain, 'would burst out and discharge itself in some form of exertion, whether useful or useless. We usually endeavour to turn it to account by giving it a profitable direction, instead of letting it run to waste or something worse.'

How shall such a lad be managed ? Corporal punishment is clearly out of place entirely. For this exuberant activity has its origin in the nervous system, and to still further excite the nerve centres by the infliction of physical pain is to intensify the very thing you are endeavouring to suppress. I would say rather, give this boy plenty to do. Make him the 'cupboard monitor,' and never pass a day without having one of the shelves cleared out and the things put straight. Let him give out and collect the books, clean the ink-wells, sharpen the pencils, etc. What he most delights in is to stand by you at the table while you are giving an experimental science lesson. Here he is assisting you, or believes he is, whereas in his place he would interrupt. I have seen the boy's face beam with happiness and deeply crimson with intense earnestness, while cleaning and replacing the apparatus and objects used by his teacher. The lad, however, is apt to give some trouble at an annual examination. Unless previously well checked he will persist in suddenly jumping up and giving a sort of explosive answer directly the solution of a problem has flashed across his mind. Mr. Du Port was taking mental arithmetic in the First Standard. 'If,' said the inspector, 'Tommy had one hundred marbles in his pocket, and he give his sister twenty and his brother thirty, how many would he have left ?' Our little friend, who instantly saw a short cut to the solution of this, jumped up, darted out his hand, and burst out with the answer, 'All the rest on 'em, sir.'

OUR CERTIFICATE CLASS.

BY DR. GEORGE BEACH, M.A.,

Co-Author of 'A Manual of our Mother Tongue,' 'A Girl's Arithmetic,' Author of 'Elements of English,' 'Entertaining Readers,' etc.

1. A month ago Christmas was here, and since that season of jollity, doubtless many students have pined to be in harness again, and pressing forward to the mark of their calling—the 1892 Certificate Examination.

Before such, no matter who they be, lies much arduous toil, considerable self-denial, and the exercise of much determination.

The questions set at the 1891 Examinations were such as should deter the half-hearted, and spur the fully resolved. They were of such a nature as to task severely the well-informed, and to exercise thoroughly the ingenuity of the talented.

Those who had merely read ordinary text-books could certainly not answer the questions in Geography and History, and the tests in English were of a high character, and calculated to exercise the trained faculties of a matured literary intellect. There are many Degree examinations less arduous and scholarly, and it will occupy all the time and energy of our readers to prepare for next Christmas.

2. To Acting-Teachers we shall for the next ten months chiefly address ourselves, and for their needs we shall chiefly cater ; but nevertheless it is hoped that our hints, analyses, and information given, will be of use also to the Student-in-Training. The Acting-Teacher is greatly handicapped by the necessity of both pursuing his daily labour, and studying coincidently ; but if he will eschew all unnecessary pleasures, take the needful recreation, and fit-in everything else to his Certificate Course, all may yet be well. Less than this absolute devotion will not suffice. Three hours' conscientious, uninterrupted, and regular study is an absolute necessity.

3. The aim of our Pupils must be high—a good position in the First Class ; a lower mark will probably degenerate into an ignominious failure. The bare number of compulsory subjects is not enough to ensure success ; the marks for Drawing and Science should also be secured. These subjects should be sat for next May. Drawing does not form any part of the December examination. Annual examinations, in the series of Exercises prescribed in the Science and Art Directory for the 'D' certificate are held in October or November at each of the training Colleges, and at the various local Schools of Art, at times to be learned from the schools' secretaries. The marks awarded will be carried to each candidate's total of Certificate marks.

Acting-Teachers will receive additional marks for any two of the specified Science subjects in which they may have obtained a first or second class in the Advanced Stage or Honours at the ordinary May examinations.

In many counties the present conjunction of circumstances is especially favourable to our readers. The County Council have in numerous instances established *free* classes for Science and Drawing, and are even paying the railway fare expended by Teachers in travelling to the different centres of instruction.

Foremost among these the Cheshire County Council has awarded the munificent sum of £1,000 to be devoted mainly to these subjects, under the superintendence and administration of the Cheshire Teachers' County Council.

4. The first thing that every candidate should do is to obtain an *official* copy of the *Government Syllabus* from the Education Department, Whitehall, London.

This should be studied right critically, and the groups to be taken most carefully selected.

In *Reading and Repetition* Acting-Teachers must read at the Certificate Examination, but recite at the Annual Inspection of the School in which they are engaged.

The Recitation must be 300 lines in length, and be, for First Years, taken from Milton, Byron, Wordsworth or Tennyson; and for Second Years taken from a play of Shakespeare. Obviously, in the latter case, the portion selected should be from *King Lear*. The Reading will be heard from a specified book, which may be specially prepared, and from a strange work brought by the Examiner.

The specified books are—For First Years, Scott's *Fair Maid of Perth*, and Shakespeare's *Merchant of Venice*; for Second Year Women, Milton's *Comus* and *Samson Agonistes*, and Macaulay's *Biographies*; for Second Year Men, Milton's *Paradise Lost*, Books I. and II., and Trench on the *Study of Words*.

In English the books to be studied are :—

	First Year	Second
Men	Scott's *Lay of the Last Minstrel*. Bacon's *Essays* 1, 2, 4, 5, 9, 11, 14-19, 21, 24, 25, 27-32, 36, 38, 39, 50.	*King Lear*, and the work of the First Year.
Women	Wordsworth's *Tintern Abbey, Resolution and Independence, The Ode to Duty, Intimations of Immortality*. Burke's *Reflections on the French Revolution*.	*King Lear*, Trench's *Study of Words*, Lectures IV., V., VI. of the 13th or later edition.

The book chosen for School Management is *Herbert Spencer on Education* (Chapters I. and II.), or *Locke's Thoughts Concerning Education* (Sections 140 to 195 inclusive). This applies to Second Years only.

In the syllabus for Women the following alterations or additions have been made :—

First Year.—Musical Terms in common use; The immediate causes and effects of historical events.

Second Year.—Alternative questions on Elementary Algebra extending to Simple Equations with *one* unknown.

In the syllabus for Men the changes are as appended :—

First Year.—Musical Terms in common use; General Geography of British Empire; Sketch maps of England and Wales, Hindostan and New Zealand; The immediate causes and effects of historical events.

Second Year.—In Part II. there are now *seven* groups, three of which only can be taken. Of these three, English must be one. A new group, 'Algebra and Geometric Conic' Sections, has been formed.

The Geography and History are the same as in First Year.

Books Set for Languages.

Languages	First Year		Second Year	
	Men	Women	Men	Women
Latin	Aeneid, Book VI.	As for Men	Aeneid, Books VI. and VII.	As for Men
Greek	Anabasis, Book I.	——	Anabasis, Book I. and Iliad, Book I.	——
French	'Le Directoire'	As for Men	'Le Directoire' and 'Les Femmes Savantes'	As for Men
German	'Der Neffe als Onkel'	" "	'Der Neffe als Onkel,' 'Hermann und Dorothea'	" "

Method of Study, etc.

Every candidate who can possibly secure personal tuition should do so, and if this cannot be achieved, then tuition by correspondence,

Neither of these is absolutely necessary if our directions be followed and advice attended to, but much time will be saved, and individual angularities and defects remedied.

We do not advise too much manuscript work (although study should always take place with pen in

hand), nor too formal a use of note-books. With the present improved style of text-books written specially for Teachers, with the prominent features brought out in bold type, an abstract of any manual is now unnecessary. Much underlining, interlineal and marginal notes should, however, be inserted.

Every subject required should be commenced and taken in due order according to the Routines which we shall insert next month. Many candidates attempt to work up one subject at a time, and after covering all the syllabus, go through the same dreary unvaried round. This method, if indeed it can be dignified by that name, is most unsystematic, unsymmetrical, fatiguing and inefficient.

During 1892, the Certificate Student's moderation must be known unto all men. Nothing should be carried to excess, neither leisure, recreation, hours of study, diet or hours of sleep. Plan out your days, weeks and months, and fulfil the scheme. Without delay the candidate should apply through the School Correspondent for permission to sit at the Xmas. Examination. It should also be borne in mind that no person will be allowed to take the Music Paper if he do not produce a certificate from some competent person (such as an organist) that he has such an amount of skill, vocal or instrumental, as is sufficient for the purpose of teaching children to sing from notes.

DON'T FAIL TO PROCURE THE RECOMMENDED TEXT-BOOKS. It is astonishing what antiquated manuals are still in use throughout the country—good, no doubt, in their day, but now thoroughly obsolete and in some cases even misleading.

What shall it profit, to save five shillings and loose your certificate?

TEXT-BOOKS.

Men and Women.

Miscellaneous.—Heller's Code, Stormonth's Dictionary, Dunstan's 'Teacher's Manual of Music,' Hughes's Certificate Copy Book, Hughes's Art of Handwriting, and Halford-Hawkins' Art of Reading and Reciting.

School Management.—Gladman's School Method, Sully's Psychology, Jevon's Logic Primer, Specimen pages of the Durham Register, Bailey's 'How to Teach the Babies.'

Arithmetic.—Wollman's Teachers' Arithmetic.

Geography.—Gregory's Physical and Astronomical Geography, Brook's Geography, W. and A. K. Johnston's 'Multum in Parvo' Atlas, Hughes's 'How to Draw a Map,' and Arnold's 'Memory Maps' will also be of great use.

History.—Ross' Larger History, Curtis' Date Book, McLeod's Constitutional History.

English.—Lewis' edition of Bacon's Essays (except for 1st Year Women), Dr. Beach's 'Elements of English,' 'Dawson's Paraphrasing.'

Latin.—Huxley's 'Latin Course.'

French.—Professor Darqué's 'French Course.'

Men only.

History.—Davies' Historical Manual (1603 to 1702).

Algebra.—Knight's Factors, Hamblin Smith's Algebra.

Mensuration.—Todhunter's.

Euclid.—Deighton's, Egan's Exercises, Parts I. and II.

Arithmetic.—Wollman's Teachers' Arithmetic, Pendlebury's.

Women only.

History.—Davies' Historical Manual, 1789 to 1820.

Arithmetic.—Dixon and Beach's, Dr. Beach's Standard VII. cards.

Domestic Economy.—Hughes's 'Domestic Economy.'

Sewing, etc.—Mrs. Jones' Needlework Book, Needlework Diagrams for Certificate Examination, published by Howarth Barnes, and a few penny Drawing-to-Scale Books.

Of the numerous editions of *King Lear*, the following can be highly recommended:—Moffatt and Paige's, The Clarendon Press Copy, Macmillan's by Deighton.

The books from which the Reading will be heard should also be purchased. This year they are cheap enough, not like it was last year, when one of them cost us £1 5s. 6d.

NEXT MONTH A SERIES OF SUITABLE QUESTIONS AND DETAILED ROUTINES APPORTIONING EVERY HOUR'S WORK WILL BE INSERTED. Meanwhile our Readers can be arranging their affairs, procuring the requisite Text-Books, and securing the foundations of any subject.

CORRESPONDENCE.

We shall be pleased to reply briefly and through these columns to anyone seeking examinational information and advice.

This privilege does not, of course, extend to furnishing the solutions and answers of problems.

Replies demanding urgency will be promptly forwarded per post on receipt of a stamped and addressed envelope. A post will be saved by writing direct to DR. GEORGE BEACH, M.A. *(Examination Editor of Practical Teacher)*, STANLEY MOUNT, MACCLESFIELD.

S. D. (Evesdale).—At a Training College or local centre, not at the school.

J. F. (Walsall).—You will not have to teach at the Scholarship Examination.

A. M. (Burnley).—2nd Elementary does not count.

W. N. (————).—Two miles measured according to the nearest road.

T. R. (Lanjeth).—Your first question cannot be answered in a few lines. Yule's Perspective or Knight's.

O. L. O. (Swansea).—'*All students*' includes Acting Teachers.

T. J. L. (Aberdare).—Scholarship next July, unless your engagement is extended under paragraph 4 of the memorandum of agreement (See Art. 42, f).

L. A. (Dorchester).—Undoubtedly beyond the syllabus.

L. L. K. (Batley), Z. J. (Richmond), A. E. (Salisbury), F. W. D. (Beccles), Y. K. (Yarmouth), B. U. (Saltley), W. W. (Burslem), 'V' (Bacup), C. W. L. (S. Austell), T. U. B. (Warwick), T. J. (Pontardulais), D. L. J. (Denbigh), U. L. (Wednesbury), E. S. (Brierley Hill), H. O. (Ottery S. Mary), J. W. (Macclesfield), F.R.A. (Houghton-le-Spring), F. K. (Roundale), S. O. E. (Coventry), W. J. P. (Ashton-under-Lyne), G. P. B. (Nantwich), R. R. (Bangor), J. R. (Beith, N.B.), G. B. (Preston), W. S. (Weston-super-Mare), M. B. (Stockport), ANXIOUS (Backworth), J. S. (Stourbridge), J. H. (Langholm), J. E. W. (Bungay), W. J. L. (Tannach), L. A. S. (Cheltenham), G. B. (Edinburgh), G. L. W. (Bourton-on-the-Water), W. H. (Sittingbourne), 'MR.' (Ashbourne), LUCY (St. Heliers), J. O. (Swansea).

SCIENCE NOTES.

THE AGRICULTURAL EXHIBITION IN NORWAY.—The Agricultural Exhibition, to be held in Christiania from June 28th to July 3rd, is of considerable interest, embracing, as it does, not only the exhibition of machinery and foods of direct use in agriculture, but the consideration of such scientific aids to agriculture as come within the scope of the Exhibition. Within the limits that intending foreign exhibitors can only show articles on condition that such are kept for sale by tradesmen resident in Norway, and that notice of exhibits must be sent in before the 31st of March to Landbrugs Direktören Indre Department, Christiania, foreigners can compete in all three of the classes into which exhibits will be divided. These are: 1, Agricultural machinery of every description, as well as machinery employed in the working up of agricultural produce; 2, All kinds of cattle foods, manures, colouring materials for the dairy, rennet, etc.; 3, Scientific aids to the promotion of agriculture, *e.g.*, collections of animals, plants, seeds, minerals, etc., works of instruction, handbooks, drawings, plans, models, scientific instruments and apparatus.

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THE SUN'S REVOLUTION.—A distinguished Swedish astronomer, Professor Dunér, has, by observing the displacement of the lines of the solar spectrum in the Potsdam Observatory, succeeded in measuring the movements of the sun with an exactitude productive of very interesting results. The sun, it appears, moves round its axis at the rate of a mile and two hundred and forty-two feet in one second, and consequently the sun's day lasts at its equator twenty-five and a-half days of our reckoning, while, as the revolution in different parts of the body of the sun regularly increases in length from the equator to the poles, the day at those parts of the sun's surface which are situated near its Poles is as long as forty-six of our days.

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AERONAUTIC PHOTOGRAPHY.—Dr. Thompson is of opinion that the surveying of the future will be carried out by aeronautic photography. To the space above a city to be surveyed, a balloon will be anchored by three cords, and a camera fitted with an automatic shutter worked from the inside suspended from the car. An operator in the car will watch through the sight tube, and take a photograph at the moment when the balloon is over the selected centre in the city. By shifting the balloon a series of photographs completing the survey of the city will be obtained, and can be transferred direct to the printing press. Such photographs, taken with rectilinear lenses, Dr. Thompson affirms, with confidence, could be fitted section to section with perfect accuracy; and a single photograph afterwards taken from them and combining portions of each would form a complete and minutely accurate survey of the city, capable, without the aid of pen or graver, of being transferred to a lithographic stone or metal plate to be printed therefrom.

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ANOTHER SCHEME FOR REACHING THE NORTH POLE.—M. Ekroll, a Norwegian, contemplates a journey by a new route to the North Pole. In the summer of 1893, having established a depôt of supplies at Cape Mohn, on the east coast of Spitzbergen, he will start in a north-easterly direction, by sea to Petermann Land. From this place, the most northerly known part of Franz Josef Land, M. Ekroll will shape a straight course for the Pole, but if the southern ice-drift be too great for him to overcome, he will retreat to his supplies on Spitzbergen. If he succeed in reaching the Pole he proposes to return by the east or west coast of Greenland, eking out his food resources by drawing on the provision depôts left by previous explorers at Lady Franklin Bay or Scoresby Sound. The expedition will consist of only six men, and they will have six small sledges drawn by dogs, by an invention which seems a valuable addition to appliances for Arctic work. The six sledges can be joined together in the event of the expedition meeting with open water with very little trouble or loss of time. Thus converted, they form one large boat for sailing or rowing.

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INSECT-FED PLANTS.—Some interesting experiments recently undertaken by Mr. Francis Darwin prove conclusively that insect-fed plants bear heavier and more numerous seeds than insectivorous plants not so fed. When two lots of plants were grown under similar conditions, but one lot was fed with roast meat (one-fiftieth of a grain being placed on the secreting glands), while from the other all animal matter was strictly excluded, a most marked effect was exerted on the number and weight of the seeds. The number of seeds produced by the fed plants was in the proportion of 240 to 100 of the seeds produced by the unfed ones, while their total weight was as 380 to 100.

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MISTS ON HILLS.—Mr. John Aitken, the meteorologist—to whose researches on dust in the atmosphere we owe the knowledge of the fact that fogs and clouds are formed by the collection of water vapour on the dust particles of the air—has now discovered that the collection of mists on hills arises from the presence of an abnormal quantity of dust particles in the atmosphere there. He has also found that clouds often dissipate themselves in a steady shower of minute drops which do not reach the ground, being evaporated by the radiation of the earth's surface.

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NEW TELEPHONES.—A telephone recently invented by M. Mercadier is exciting considerable attention in the scientific world by the support it gives his theory that perfect telephonic transmission is independent of the size of the instrument, being really governed by the intensity of the magnetic field, and the diameter and thickness of the diaphragm. M. Mercadier's telephone is one-eighth of the weight of the telephone now in use, and through the agency of nipples on the receiver, which collect the sound, the maximum of clearness and intensity is attained. A telephone whose chief feature is its independence of insulators is also being tried. It is the invention of Captain Charolles, and like M. Mercadier's telephone, can be attached to the ear, thus enabling persons in communication to record their conversation without a break.

***

ARTIFICIAL IVORY FROM MILK.—From America come the details of an artificial product suitable for most of the purposes for which bone, ivory, ebonite or celluloid have hitherto been employed. Milk is first coagulated, then strained, and the whey rejected. Of the curd 10 lbs. are taken and mixed with a solution of 3 lbs. of borax in 3 quarts of water. The mixture is then placed over a slow fire, till it separates into two parts, one of which is thin and watery and the other viscid. The watery part having been drawn off, a solution of 1 lb. of a mineral salt, *e.g.*, sugar of lead, copperas, or blue or white vitriol is added to the residue, which separates into a liquid and a mushy solid. The liquid is then got rid of by straining or filtering, and colouring matter may be added, if desired. The solid which in the absence of such admixture is of a whitish hue, is placed in moulds, subjected to great pressure, and dried at a fierce heat. Lactitis, as the new product is called, is very hard and strong.

***

IMITATION COFFEE BEANS.—An ingenious form of adulteration, is also attaining extensive dimensions in the United States. This is the manufacture of artificial coffee beans, composed of rye flour, glucose and water. They are indistinguishable in shape from the true beans with which they are mixed; and as they readily imbibe the aroma of the genuine berries, the fraud is not easily detected. So profitable is the adulteration that German merchants began to engage in the industry, tempted by the prospect of more than a 100 per cent. profit. Since the Government at Berlin forbade the construction of the machinery for making these artificial beans, and ordered all that could be found to be confiscated, the manufacture has practically ceased in Germany.

***

THE COMING COMET.—Early in the present year astronomers are expecting the return of the comet discovered by Pons at Marseilles in 1819, but not recognised as a periodic comet till 1858. In that year, Professor Winnecke, on its re-discovery at Bonn, found that it was moving in an orbit of about five and a-half years. It escaped observation in 1863 and 1880 in consequence of its unfavourable position, but was visible in 1869, 1875 and 1886.

***

INSECT VISION.—Professor Exner, of Vienna, by a recent experiment, has arrived at the interesting conclusion that the multitudinous lenses of the compound eye of a fire-fly, *Lampyris splendidula*, do not transmit to the retina as many separate pictures as there are lenses, but on the contrary converge so as to produce but a single picture. Through the eye of a fire-fly he photographed most successfully a church and churchyard seen through a window.

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THE CAMERA AND THE PLANETS.—Stellar photography, it was confidently predicted, would result in the discovery of new planets, for the presence of a planetary body betrays itself in two ways. When two photographs of the same region of the heavens, taken at different times, are compared, the movement of a planet with regard to the fixed stars in the interval is easily seen, and if a single plate be exposed long enough, the movement of the planet will be shown by a trail upon the plate while the fixed stars appear as dots, the telescope being driven by clockwork so as to keep them always in its field. Quite recently Dr. Wolf, of Heidelberg, by means of photographic plates, has discovered two minor planets, one of which is new, while the other, which is probably identical with Sapientia, has only once been observed in opposition. The next few years should show great advances in astronomical investigation.

J. R. G.

QUERY COLUMN.

Arithmetic.

CAMY.—One of two clocks is nearly an hour faster than the other. At the same instant the hour and minute hand of one clock are in the same positions as the minute and hour hand respectively of the other clock. Find the *exact* amount by which one is faster than the other.

This question is very vague, as this would occur in several instances. Take, for example, that the slower clock is 11 minutes past 1. The hour hand would be $\frac{11}{12}$ minutes past 1.

Time by faster clock would be $5\frac{5}{11}$ minutes past 2.

Difference = 2 hours $5\frac{5}{11}$ minutes — 1 hour 11 minutes
= $54\frac{5}{11}$ minutes.

Again, take the slower clock at 16 minutes past 2,

The hour hand would be $\frac{16}{12}$ or $1\frac{1}{3}$ minutes past 2.

Time by faster clock would be $11\frac{1}{3}$ minutes past 3.

Difference = 3 hours $11\frac{1}{3}$ minutes — 2 hours 16 minutes
= $55\frac{1}{3}$ minutes.

Again, take the slower clock at 11. Then the faster clock would be 5 minutes to 12, and the difference would be 55 minutes. But the minute hand of the clock in the first case would be on the 12, and in the second case the hour hand would be $\frac{11}{12}$ minutes from the 12.

∴ The hour and minute hands of one clock cannot in any case be *exactly* in the same positions as the minute and hour hands of another clock, as the *minute hand* goes twelve times as fast as the *hour hand*.

VENITIA.—If I purchase £1,000 Three per Cents. at a discount of $3\frac{1}{2}$ per cent., and selling out again after the stock has fallen to $82\frac{3}{4}$, invest the proceeds in Three and Three-quarters per Cents. at par, what do I lose in capital by the whole transaction, and what do I gain in income?

(*a*) Loss on £100 Stock = $\{(100 - 82\frac{3}{4}) - 3\frac{1}{2}\}$£
= $(17\frac{1}{4} - 3\frac{1}{2})$ £
= £$13\frac{3}{4}$,
∴ Loss on £1,000 Stock = £$13\frac{3}{4}$ × 10
= £137 10s. Ans.

(*b*) Income in first case = 3 per cent. on £1,000
= £30;

Amount received on selling out = £$82\frac{3}{4}$ × 10
= £827 10s.,

Income in second case = $3\frac{3}{4}$ per cent. on £827 10s.,
= £827 10s. × $\frac{3}{80}$
= £10 6s. 10½d. × 3
= £31 0s. 7½d.;
∴ Gain in income = £31 0s. 7½d. — £30
= £1 0s. 7½d. Ans.

Algebra.

R. U. I.—

(*a*) Resolve into four factors—

$\{(x-a)(y-b) + (x-b)(y-a)\}^2 - (a-b)^2(x-y)^2$

(*b*) Solve:—

$$\left.\begin{aligned} x^2 - 2y^2 &= 4y \\ 3x^2 + xy - 2y^2 &= 16y \end{aligned}\right\}$$

(Royal University of Ireland, 1887 and 1888.)

(*a*) $\{(x-a)(y-b) + (x-b)(y-a)\}^2 - (a-b)^2(x-y)^2$

$= \{(x-a)(y-b) + (x-b)(y-a)\}^2 - \{(a-b)(x-y)\}^2$

$x^2 - y^2 = (x+y)(x-y)\}$ $= \{(x-a)(y-b) + (x-b)(y-a) + (a-b)(x-y)\}$

$\times \{(x-a)(y-b) + (x-b)(y-a) - (a-b)(x-y)\}$

$= (xy - ay - bx + ab + xy - by - ax + ab + ax - bx - ay + by)$

$\times (xy - ay - bx + ab + xy - by - ax + ab - ax + bx + ay - by)$

$= (2xy - 2bx - 2ay + 2ab) \times (2xy - 2ax - 2by + 2ab)$

$= 2\{(xy - bx) - (ay - ab)\} \times 2\{(xy - ax) - (by - ab)\}$

$= 2\{x(y-b) - a(y-b)\} \times 2\{x(y-a) - b(y-a)\}$

$= \{2(x-a)(y-b)\} \times \{2(x-b)(y-a)\}$

$= \underline{4(x-a)(x-b)(y-a)(y-b)}$. Ans.

(*b*)—

$$\left.\begin{aligned} &(1.)\ x^2 - 2y^2 = 4y \\ &(2.)\ 3x^2 + xy - 2y^2 = 16y \end{aligned}\right\}$$

$$\left.\begin{aligned} &(1.)\ x^2 - 2y^2 = 4y \\ &(2.)\ 3x^2 + xy - 2y^2 = 16y \end{aligned}\right\}$$

$xy + 4y^2 = 4y$

$x + 4y = 4$

$\therefore x = 4 - 4y$

(1.) $x^2 - 2y^2 = 4y$

$(4 - 4y)^2 - 2y^2 = 4y$

$16 - 32y + 16y^2 - 2y^2 = 4y$

$14y^2 - 36y = -16$

$y^2 - \frac{18y}{7} = -\frac{8}{7}$

$y^2 - \frac{18y}{7} + \left(\frac{9}{7}\right)^2 = \frac{81}{49} - \frac{8}{7}$

$= \frac{25}{49}$

$y - \frac{9}{7} = \frac{+5}{-7}$

$\therefore y = \frac{+5}{-7} + \frac{9}{7}$

$= 2$ or $\frac{2}{7}$.

The second value will be found to be inapplicable.

$\therefore x = 4 - 4y$

$= 4 - 8$

$= -4$.

$\therefore \underline{x = -4 \text{ and } y = 2}$. Ans.

CELIA.—A and B can do a piece of work in 12 days; A and C in 15 days; B and C in 20 days. In what time will they finish it all working together? *(Hamblin Smith.)*

Let x = No. of days that all will take,

Then $\frac{1}{x}$ = Part done by all daily,

And $\frac{1}{12}$ = Part done by A and B daily,

$\frac{1}{15}$ = Part done by A and C daily,

$\frac{1}{20}$ = Part done by B and C daily;

$\therefore (\frac{1}{12} + \frac{1}{15} + \frac{1}{20}) \div 2 = \frac{1}{x}$

$\frac{5+4+3}{60} \times \frac{1}{2} = \frac{1}{x}$

$\frac{1}{5} \times \frac{1}{2} = \frac{1}{x}$

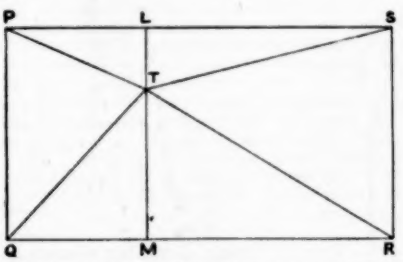
$\frac{1}{10} = \frac{1}{x}$

$\therefore x = 10$.

$\therefore \underline{\text{Time} = 10 \text{ days}}$. Ans.

Geometry.

DIONYSIUS.—PQRS is a rectangle, T any point. Show by I. 47 that the squares on TP, TR are together equal to the squares on TQ, TS.



Through T draw LM parallel to PQ or SR. (I. 31.)

Proof—

$TP^2 = PL^2 + LT^2$, (I. 47)

$TR^2 = TM^2 + MR^2$,

$\therefore TP^2 + TR^2 = PL^2 + LT^2 + TM^2 + MR^2$;

$TQ^2 = TM^2 + QM^2$

$= TM^2 + PL^2$,

$TS^2 = LT^2 + LS^2$

$= LT^2 + MR^2$,

$\therefore TQ^2 + TS^2 = PL^2 + TM^2 + LT^2 + MR^2$;

Wherefore $TP^2 + TR^2 = TQ^2 + TS^2$.

Q. E. D.

PUBLICATIONS REVIEWED.

Wall Map of Africa. London and Edinburgh: W. and A. K. Johnston.

This is undoubtedly a very fine production. Of large size, nicely printed, carefully and distinctively coloured, and with every feature studied to ensure the maximum of legibility and general clearness, the map is a close approach to the ideal of a wall map for ordinary school work. Africa is, we should imagine, the *bête noire* of modern map publishers. A map, produced at great expenditure of time and money, and brought with almost infinite pains up to date, is no sooner well before the public, and apparently just about to make some returns for the outlay incurred, than some intrepid explorer, who has long been given up for lost, inopportunely turns up with any amount of fresh information respecting rivers and mountains and other physical features, and puts it promptly out of date in some of its details. It has sometimes occurred to us as an experiment worth trying, and we venture now to throw out the suggestion, that where great expense has been incurred in bringing out a new map which happens to be depreciated by fresh discoveries made soon after publication, it might possibly pay cartographers to publish, at a small charge, a supplementary slip—on the same scale and in the same style as the map—embodying these new discoveries. Those who are already in possession of the map could then purchase the supplementary slip, and paste or otherwise attach it in its proper position on the sheet. The possibly 'patchy' appearance of the map would be more than compensated for, as far as all practical purposes are concerned, by the fact that the 'patch' brought the map up to date.

Other suggestions which we take this opportunity of offering, as being serviceable in educational maps of the kind now before us, and capable of being introduced without impairing the legibility and general clearness, are the following:—Important sea currents might be indicated, and this might well be done by the employment of single red lines, with arrowheads here and there to show direction of flow. The insertion of a few soundings would also be interesting and serviceable. Periodical or prevailing winds—such as the Trades, Monsoons, &c.—might also be shown; and a blue circle, containing an arrow indicative of direction, might be suggested as a suitable mode. A couple of insets showing the comparative lengths of rivers and heights of mountains would also be useful, as would also be some means of indicating to the eye the size of the country dealt with in the map, in comparison with some well known portion of the earth's surface—say England and Wales. This latter matter is, we are aware, already carried out in some maps, but the principle might with advantage, we think, be extended.

Pictorial Illustrations of Trades: The Laundress. London and Edinburgh: W. and A. K. Johnston.

This plate is a fresh addition to the series of sheets illustrative of various well-known trades, some examples of which have already been noticed in these columns. The present picture illustrates the familiar details connected with laundry work, and shows graphically the whole cycle of operations connected with the conversion of 'dirty clothes' into clean—soaking, boiling, washing, wringing, drying, ironing, and so forth. It may be described as a faithful representation of 'washing day' in a modern middle-class home, and does not profess to show the more technical and commercial aspect of laundry work as carried on in the large professional establishments to be found near London and other large cities, wherein steam power and mechanical and chemical aids of various kinds are called upon to play their part in the various operations. This is no doubt as it should be, for whilst every school girl is interested more or less in the episodes of an ordinary 'washing day,' not one in a thousand is likely to be associated in the work of a professional laundry.

Natural History Plates: Squirrels. London and Edinburgh: W. and A. K. Johnston.

This fresh addition to Messrs. Johnston's series of Natural History Plates illustrates squirrel-life as exemplified by the Common Squirrel of our own woods, and the Flying Squirrel and Grey Squirrel of North America. In drawing and colouring the sheet leaves nothing to be desired, and the standard of excellence shown in the previously published plates of the same series is well sustained.

Notes on Elementary Physiography. By Horace C. Martin. John Heywood: Manchester and London.

In the preface of this work the author remarks, 'These notes do not lay claim to originality.' They have been collected from various sources, and works by Huxley, Lockyer, Geikie, and other reliable authors are said to have furnished much of the information. Well, we cannot compliment Mr. Martin upon his selection of facts and principles, and we think that most of the authors to whom indebtedness is acknowledged would object to being held responsible for some of the statements. The work is one eminently calculated to sicken a young beginner and give a student the headache. In this, however, it does not differ from the majority of text-books. But it is a pity that the extracts from the standard authors were not printed verbatim, and without any of Mr. Martin's garnishing. The number of awful errors might have been considerably diminished by following such a course. It would be impossible to state all the counts of the indictment of this work preferred by us to those who study or intend to study Elementary Physiography. To begin with, we find on p. 19 a 'List of important binary compounds containing two elements.' Surely this is the veriest tautology, and the last three words might well have been omitted. Similar expressions occur in the cases of ternary and quarternary compounds on p. 20. On p. 63 we read that Professor Lockyer 'supposes that the comets, nebulæ, and stars are all of the same kind of matter.' This is not a fact of any importance, for the universality of the matter existing on the earth is generally acknowledged. The point insisted upon by Professor Lockyer, and missed by Mr. Martin, is, that since the spectra of comets and nebulæ are similar the two bodies are in the same physical condition. To assert also that 'It is generally allowed that there is a planet nearer the sun than mercury' is to exhibit an ignorance of prevailing astronomical opinion, for only a couple of astronomers in England believe in this planet of romance. The figures are all bad; the two diagrams of solar eclipses given on p. 148-155 being especially so. But even these pale before a figure of a sun-spot given on p. 149. The spot is shown as a large white blotch surrounded by a couple of dozen dark gravel-shaped markings. Mr. Martin is a teacher of Physiography and should possess a small telescope, but this figure of a sun-spot makes the fact lamentably apparent that he has never observed the phenomenon he attempts to describe, although any small instrument is sufficient to show the spots which now appear on our luminary nearly every day. And where on earth did Mr. Martin get the sentence that sun-spots 'are due to uprushes of incandescent hydrogen, and are identical with the red flames seen during an eclipse'? Such an assertion is most misleading and, as it stands, every word of it is utterly and terribly wrong. Lack of space prevents our saying more. The work may be useful for cramming purposes, but not for intelligent study. The student of it may satiate his brain with the numerous definitions without understanding them, and his heart will meanwhile be filled with a disgust of what is really the most interesting of the sciences. He will be in the perplexing position of the boy who, on being taken to the seaside after having learnt by rote that 'the Lord made heaven and earth, the sea, and all that in them is,' said, 'Yes, here is the earth and there is the sea, but where is the in-them-is?'

How to Earn the Drawing Grants. By the Author of 'How to pass 90 per cent. and earn Excellent.' Manchester: John Heywood.

Nearly everything is good about this book except the title, and we regret that Mr. Gardiner should have felt inclined to continue the style. While the earning of the drawing grant is very material, the chief aim of the book is to assist teachers to teach drawing skilfully, systematically, and thoroughly. It contains nearly 500 illustrations; every part of the syllabus for every standard is carefully explained and illustrated, and the practical teacher who is the veriest novice in the art, by practising the copies beforehand and by carefully following the instructions given, will be able to teach his children in such a way as to present them with confidence to the drawing inspector.

The part least fully treated is the shaded drawing of Standard VII., a few general rules only being given; and the author very wisely advises all masters and mistresses to get such tuition from a competent art teacher as will enable them to obtain a teacher's certificate in the subject. The book ought to be of immense service to thousands of teachers in small schools, to whom the new regulations come as an additional tax on their time and capabilities.

Longmans' Handbook of English Literature from A.D. 673 to the Present Time. By R. McWilliam, B.A. London: Longmans, Green and Co.

Having noticed and commended the five parts in which this work was first issued, we need do little more than call attention to its issue in complete form with continuous pagination and the summary or brief outline and chronological lists brought into one and placed at the end of the volume. The work is thoroughly interesting and much care has been bestowed on making a judicious selection of matter and on securing accuracy. The young student could hardly find a better or more companionable guide through the field of English Literature than Mr. McWilliam.

The Story of English Literature. By Anna Buckland. London: Cassell & Co., Limited.

This admirable work places before the reader a continuous narrative of our country's literature from the earliest times to the middle of the present century. The very early writings, and also the most recent, are dealt with briefly for very different but obvious reasons. Celtic, Saxon, and Norman Writings are subjects for advanced study, and modern literature is too extensive to be treated in detail in a general handbook for young readers. The great writers from Chaucer are presented in their lives and works, the latter being in many cases fully and faithfully described, and illustrated by abundant quotations. We rejoice that a book written with such marked ability, and in so praiseworthy a spirit of reverence and patriotism, should be placed within the reach of readers of moderate means, and we are glad to learn that it has been adopted by the London School Board as a reading book for pupil teachers.

The Practical Drawing Cards. By Harry C. Wilcocks. London: George Philip & Sons, 32, Fleet Street.

These are published in eleven packets at a shilling each. The cards are very strong and good, and the drawings clear and bold. Mr. Wilcocks has set a very high standard to be attained to, especially in the freehand examples, packets A, 2, 6, 8 and 10 being in our opinion somewhat difficult, and those in packet 2 being imperfectly graduated. Granted that if a high standard is desirable, these packets are deserving of a place among the best in the market.

Dr. Beach's Entertaining Readers. No. 5. Standards V., VI., and VII. London: Joseph Hughes and Co.

The fifth number of Dr. Beach's admirable series of reading books is quite up to the high standard of its predecessors. The matter it contains exhibits in the same high degree the distinctive features of novelty and variety. As to novelty and freshness, it is noticeable that of the prose pieces not more than one or two, so far as we remember, have appeared in any of the numerous series of school readers it has been our duty to examine. The poetical selections include some standard pieces such as Macaulay's 'Lay of Horatius,' Collins' 'Ode to the Passions,' Shelley's 'Cloud,' and extracts from Shakespeare and Milton; but there are also several pieces quite new to standard reading books. As to variety, it may be remarked that, while many of the books compiled for upper standards may be looked through in vain for the slightest matter for a laugh, Dr. Beach includes in his selection excellent specimens of wit and humour as well as pieces in which wonder and pathos are the most prominent features. He draws from all classes of literature, from works of pure imagination to the pages of the newspaper, from modern books of travel and adventure to the droll pages of Mark Twain and the columns of such papers as *Fun*. Some pages are devoted to anecdotes suitable for exercises in composition, others to verbal felicities and curiosities which will delight the children and cultivate their intelligence in the pleasantest fashion.

Spelling lessons are not appended to each lesson, but at intervals a page or two are occupied with columns of the more difficult words already used, and some lessons are given on the prefixes and affixes used in the formation of words.

More than sixty newspaper extracts, suitable for reading or dictation, conclude the volume.

Considerable variety of type is employed to accustom the readers to the different kinds they are likely to meet with later; and a number of original illustrations are introduced —the work of Mr. Austin T. Young.

The book may be recommended for the higher standards of any school, but it will be found specially adapted for use in the large number of schools in which the three upper standards have to be taught together.

'Simplex "Tot" Apparatus;' by S. Haworth-Wigan: R. Platt.

This very simple and compact apparatus is designed to meet the same code requirement aimed at by Mrs. Sisson's 'Long Tot' Roller, described above. It consists of a printed sheet of money columns attached to a roller, in just the same way as an ordinary roller blind, and fitted with an automatic arrangement by which the 'blind' can be held securely fixed at any point in its ascent or descent. At each side of the printed sheet are sewn loops of tape, each loop corresponding with a line of figures. Printed slips of cardboard, with a fresh line of figures upon each side, are supplied, which can be slipped into position in the loops of tape whenever it is desired to vary the sum set before the class. As will readily be understood, a large number of changes can be effected in the sums set by properly manipulating the 'blind,' and the loose slips of cardboard.

The Viaduct Series of Copy-Books. Nos. 15, 16, 17. London: The Educational Supply Association, Limited.

The style of writing in these books is clear, plain, slightly sloping, and rather large for business purposes. It is likely, however, to develop a good Civil Service hand, which is its primary intention. One merit of the books is that they are of upright shape, and so do not require so much space along the writing-desks. The series generally may be confidently recommended to teachers seeking a practical set of copy-books with headlines.

Historical Manuals for Standards III., IV., V., VI., London and Edinburgh: W. & R. Chambers.

These are small books in which an outline of English History for the different periods appointed for the standards is given in a brief but very readable narrative form. They are too small to be reckoned among the required reading books, but are likely to prove useful accessories to history lessons if used for home preparation.

The Century Geographical Readers: Nos. V. and VII B.

The Century Geographical Handbooks, No. V. London: Blackie & Son, Limited.

Among the many Geographical Readers prepared to meet the code requirements, we are inclined to think the Century Series of Messrs. Blackie & Son are unsurpassed for the picturesqueness and freshness of their descriptive lessons. This result is attained by basing the lessons on recent works of travel and observation, adaptations and extracts from which are plentifully scattered through the volumes. Book V. treats of Europe in a manner which is delightfully interesting. The lessons are brightened by many passages of poetry relating to places.

Book VII B. was prepared 'in the first instance to suit classes taking up the work of Standard VI. of the Scotch Code of 1891.' It is, however, equally well adapted for Standard VII. of the English Code, where the alternative course B is taken; and this course, treating of 'The World, and especially the British Colonies and Dependencies,' is likely to commend itself to the choice of many teachers. The type is very good, and the illustrations are suitable and abundant.

Each book concludes with a tolerably full synopsis, in which the facts and details of the geography are suitably arranged for memory work. Many sketch maps are inserted, and in these the features of clearness and fulness are very judiciously balanced.

The synopses are also issued separately, and will form admirable handbooks for home use, as we see by the specimen on Europe for Standard V.

The Century Historical Readers, No. VI. The Stuart Period. By Thomas Archer. London: Blackie & Son, Limited.

The author of this book tells the story of the period in a pleasant and interesting fashion. He skilfully traces out the progress of the struggle between the Crown and the Commons, and shows how our present constitutional government gradually took shape and became consolidated. The lessons are enlivened by the biographical sketches of men who helped to mould our history, and the interest is increased by well-executed portraits after Vandyke, Lely, Kneller, and other painters, and by the artistic illustrations, based in many cases on celebrated paintings. Poetical extracts from Aytoun, Scott, and others, are judiciously introduced, and the great writers of the period are not overlooked. Succinct summaries of the chapters, additional brief biographies, and chronological tables form a very useful appendix to an excellent historical reader.

A Manual of Logic, Vol. I. By J. Welton, M.A., London, B.A., Cambridge, Late Scholar of Gonville and Caius College, Cambridge, Tutor of University Correspondence College. London: W. B. Clive & Co.

Like almost all the other volumes of the University Correspondence College Tutorial Series, this manual of logic is undoubtedly excellent. There is nothing but good to be said of it. It is comprehensive (nay exhaustive), judicial, not unnecessarily technical, and shows on Mr. Welton's part great powers of selection, arrangement and decision, and exceedingly subtle acuteness in seeing both sides of a contention, and piercing to the '*distinguishing difference*,' instead of being drawn aside by an '*accident*.' Naturally some portions are more or less controversial, but there is no dogmatising, as is the habit of most writers on logic. A good instance is given by the discussion (pp. 209 to 211) of the old and much disputed question as to the interpretation of disjunctives, viz.:—'*Whether the alternative form necessitates that the several predicates conjoined in it be mutually exclusive in their application.*' The author here brings what most people would call 'Common Sense' into play, and decides that '*the degree of exclusiveness depends on the nature of the alternatives themselves, and not on the disjunctive form of the proposition; in other words it is material, not formal.*' He gives, however, formidable arrays of authorities who differ from one another on this point. Several pages would be required to do this manual justice, as we should like to allow the work to speak for itself by quoting some remarks upon the 'Limits of Logic,' Formal and Material Logic, Deduction and Induction (p. 30), the Categories pp. 105, etc., and the Nature of the Syllogism, pp. 322, etc.

The volume is well got up as regards binding, variety, and clearness of type; and there is an excellent marginal summary, which will be most helpful to the student when revising. In the matter of symbols and diagrams nothing remains to be desired, and the author is to be congratulated on the ingenious and original method of §106.

Dry as logic is supposed to be, this is a book that the student will linger over, and that '*London Men*' will be grateful for.

Not only do we cordially recommend it in these pages to all undergraduates, but we are glad to meet with a work whose purchase we can confidently suggest to the general inquirer. It is the best manual of its kind that we have hitherto seen, and we only regret that our limited space does not permit us to speak of its merits more fully.

The Teachers' Arithmetic. By Joseph Wollman, Author of 'Daily Working and Test Arithmetics,' 'Metric System made Easy,' etc. London: Joseph Hughes and Co.

This work of 250 pages is another of the new series that Mr. Hughes is publishing in order that elementary teachers may exactly hit the requirements and fit the grooves of the Education Department's style of examination. Every *Coach* is aware that it is not enough for his pupil thoroughly to know his subject; he must in company with his guide have previously traversed the very ground and avoided the self-same pitfalls which are put to entangle him at the examination itself.

From a complete acquaintance with Mr. Wollman's other arithmetical productions, we might have predicted, what is actually the case, that this volume has been most carefully, conscientiously, and accurately compiled. There is perhaps no particular genius displayed, but methodical arrangement, lucid exposition, and scientific processes are happily combined with a profound knowledge of 'Official Arithmetic.'

The manual is of necessity well graduated, full of examples, and just to the point, some of the solutions being particularly neat.

It contains all the Scholarship Questions for the last twenty-one years (with full Model Answers for the last four years), and all the Certificate Questions for the last eleven years (with full Model Solutions for the last five years).

The get-up, like that of all the other volumes in this series, is excellent, the paper, type and binding being tasteful and serviceable.

To Acting-Teachers, Coaches and Masters in Training Colleges it will be a great boon.

In one or two instances, such as on pp. 145, 240, 250, the matter seems spread out rather too much.

Bacon's 'Excelsior' Drawing Test Cards. Drawing to Scale for Standard IV.; Geometry for Standard V. Compiled by Frank Steeley and Bernard H. Trotman. London: G. W. Bacon and Co., Limited.

These are capital sets of test cards for Drawing. Each packet consists of 36 cards of good size, enclosed in a sub-

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Dictation Tests for Standard IV. Graduated in Difficulty. By an Inspector of Schools. London and Edinburgh: W. and R. Chambers, Limited.

This is a collection of nearly 200 passages, carefully selected and arranged in order of general difficulty. Each passage has the merit of being to a considerable extent self-contained, that is, it contains a definite piece of information coherently expressed, and intelligible without reference to the rest of the article or paragraph from which it has been taken. The teacher will find plenty of variety, and the pieces are admirably suited for their purpose.

The Suggestive Spelling-Book. Parts I. and II. London: Blackie and Son, Limited.

The sound principle that 'spelling is learned more by the *eye* than the *ear*' forms the basis of these little books. The rules commonly recognised as helpful in teaching spelling are illustrated by copious lists of words of frequent occurrence, so arranged and printed as to bring the special point of difficulty into prominence. The books wisely used will prove very serviceable in lessons on word-building. Part I. is intended for Standard IV., and Part II. for the higher standards.

An Etymological Index to Shakespeare's Play of Henry V. By F. C. Woodforde, B.A. London: Simpkin, Marshall and Co.

The compiler of this glossary seeks to help students of the play of Henry V. to answer questions on the derivation and peculiar uses of the more difficult words. The explanations are brief and pointed, and are in a great many cases accompanied by suitable etymological notes. The arrangement is alphabetical, and the words explained are identified by references to the Globe Shakespeare, and to the Clarendon Press Edition, where the numbering of the two differ. Proper names occurring in the play are dealt with in a separate list, and a genealogical table is supplied to illustrate the relations of the Royal Families of England and France; but no attempt is made to explain difficult constructions.

Bell's Reading Books: The Adventures of Oliver Twist. By Charles Dickens. London: George Bell and Sons.

This abridgment of Dickens's popular story of the poor orphan boy is a welcome addition to Bell's series of reading-books for the standards. Good judgment has been shown in the curtailment of the narrative, to bring it within the ordinary limits of a book for the standards, without allowing the interest to be broken. The longer omissions are supplied by short connecting summaries to preserve the thread of the story. The book is divided into sixty-one short lessons, and the difficult words are printed in lists at the end of the book. Eight of Cruickshank's rather grotesque drawings illustrate the text. We can heartily recommend the book for adoption in Standard V. and upwards, and we feel sure it will be a favourite with the scholars wherever it is adopted.

The Newspaper Reader. London: Blackie and Son.

This is a re-issue of a reading-book published some years ago for the use of the upper standards in elementary schools. It is a well-chosen collection of articles and passages 'from the journals of the nineteenth century, on important national events.' In the present edition many articles have been added on recent events. Now that the requirements of the Code include the reading of 'unseen' passages, such a volume as this will be found to afford most admirable practice. It will also help to familiarise the scholars with the events of our own time, and so contribute to their general information and culture.

The type adopted is similar to that used in the best newspapers of the day. A few pages at the beginning of the book illustrate the earlier journals. As the matter and style of these passages make them more difficult for young readers, it is a pity that the difficulty is made greater by using a smaller type.

Chambers's New Code Arithmetical Tests: Standards IV. to VII. By T. B. Ellery, F.R.G.S. London: W. and R. Chambers, Limited.

After subjecting this new series of Arithmetical Test Cards to actual use we can cordially recommend its adoption. Each packet consists of forty cards, with two sheets of answers, in a substantial cloth case. Every card has a set of four sums for girls, and four for boys, and two additional questions on decimal coinage and the metric system. The tests are for the most part thoroughly suitable, though some may think it a disadvantage that in the Fourth Standard a few of the questions for girls are on portions of the tables they are not required to learn. It is well that the test examinations given for practice should be at least as difficult as any likely to be given by the inspectors; but they may mislead the teacher if they include parts of the arithmetic expressly excluded from the course of preparation. The questions for Standard VII. require thorough training of the pupils, and give good scope for thought. The answers, so far as we have had opportunity of testing them, are accurate.

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Presented with the FEBRUARY Number of the 'PRACTICAL TEACHER,' a

PROBLEMS.

STANDARD IV.

Card 1.

1. If 70 lbs. of tea cost £11 13s. 4d., what is the price of 1 lb.?
2. How many 2 lb. parcels can be made from 9 cwt. 1 qr. 18 lbs.?
3. What must be paid for 3 gross of slates at 4s. 10½d. per dozen?
4. A shopkeeper bought a chest of oranges containing 1,371 for £2 5s. 9d. How much did he gain by selling them at a halfpenny each?

Card 2.

1. A wheel makes 660 revolutions in 1¾ miles; what is its circumference?
2. How much will a man earn in a year if he earns £2 3s. 9d. weekly?
3. How long will it take to count a million sovereigns, counting 125 each minute and 7 hours a day?
4. How many lbs. of sugar at 1¾d. per lb. can be bought for £1 9s. 2d.?

Card 3.

1. A draper bought 200 yards of satin at 13s. 8d. a yard and sold it at 17s. 6d. a yard; what was his gain?
2. Seventy-two men are sent to mow a field of 13 ac. 1 ro. 31 sq. po. 20½ sq. yards; how many square yards should each man mow?
3. A gentleman's income is £1,000 a year, and he saves £142 5s.; how much does he spend daily?
4. How many miles would 759 pieces of rope reach, each being 320 yards in length?

Card 4.

1. If £8 7s. 4½d. were given to the scholars in a school, and each child received a halfpenny, how many children were there in the school?
2. How many parcels, each containing 3¾ lbs., can be made from 1 ton 11 cwt. 38 lbs.?
3. Find the value of 139 qrs. 2 bus. of wheat at 1s. 11d. per peck.
4. Divide 500 guineas by 219.

Card 5.

1. What is the value of 138 cheeses, each weighing 27½ lbs., at 8½d. per lb.?
2. How many bottles, each containing 1½ pints, can be filled from 5 hogsheads of wine, each containing 63 gals.?
3. Find the sum of 23 guineas, 13 half-crowns, 50 sixpences, 74 shillings, and 27 pence.
4. A boy's weekly wages are 9s. 6d.; how many years will it take him to earn £123 10s.?

Card 6.

1. If I divide £134 8s. 8d. among 872 boys, how many farthings will each receive?
2. What quantity of currants will be required to make up 1,854 pound and 1,172 half-pound packages?
3. Find the cost of 13 pieces of cloth, each 60 yards, at 1s. 11½d. per yard.
4. If a boy waste five minutes daily, how many hours and minutes will that be in the first four months of this year (1892)?

Card 7.

1. A clerk spends 5s. 6d. a day, and is able to save £35 12s. 6d. in the year. Find his annual income.
2. A boy walks 3 miles 220 yards in an hour; how long will it take him to walk 75 miles at the same rate?
3. A chest of tea cost £5 2s. How many lbs. of tea did it contain if the value of the tea was 1s. 5d. per lb.?
4. How many guineas are equal to £2,097 18s.?

Card 8.

1. Find the value of a ton of tea at 1s. 10d. per lb.
2. What is the difference in square yards between 159 ac. 198 sq. yds. and 97 ac. 2 ro.?
3. How many walnuts at a penny a dozen can you get for 13s. 10½d.?
4. How many steps would a man take in two miles if he steps 2 feet 9 inches each time?

Card 9.

1. The cost of 56 dozen articles is £283 10s.; what is the value of each article?
2. How many sovereigns, shillings, pence, and farthings, the same number of each, are equal to £481 3s. 6d.?
3. How many more seconds will there be in January than in February this year (1892)?
4. How often will a 16 feet wheel turn round in four miles and a half?

Card 10.

1. Find the cost of 114,000 cubic feet of gas at 2s. 11d. per thousand cubic feet.
2. Five barrels of sugar, each 4 cwt. 3 qrs., were weighed into half-pound packages. How many packages were there?
3. Three pieces of cloth, each containing 38 yards, cost £48 18s. 6d.; what was the price per yard?
4. A farm was sold for £5,598 5s.; what was its area, the price being 17s. 6d. per square pole?

Card 11.

1. How many half-pints of ale can be drawn from 1,754 nine-gallon casks?
2. Add together 314 pounds, 314 shillings, 314 pence, and 314 farthings.
3. A clock loses 2 min. 39 sec. daily; how many seconds will it lose during January?
4. Find the value of twenty-eight thousand five hundred and forty marbles at twenty a penny.

Card 12.

1. What is the rent of a house for 4 years at 6s. 9d. per week?
2. The expenses of an entertainment amounted to six guineas. Find the profit if there were sold 569 tickets at 1d., 350 at 3d., and 140 at 4d.
3. What is the cost of a pound of sugar if 1 ton 17 cwt. 24 lbs. cost £30 7s. 10d.?
4. How many times could 1 peck 1 gallon be taken from 13½ bushels?

HER,' a Monthly Magazine, Price 6d.; Post Free, 7½d.; One Year, 7/6.

Card 13.

1. If a servant's wages are £11 4s. a year, how much will she receive in 17 weeks?
2. A field contained 9 acres, and the length was 360 yards; find the breadth in yards.
3. A farmer had 15 horses worth £19 5s. 6d. each, and he exchanged them with another farmer for 24 cows worth 15 guineas each. How much money was paid in addition to the horses?
4. A grocer bought a ton of rice for £16, and sold it at 3d. per lb. What did he gain?

Card 14.

1. How many times does 1 mile 2 fur. 8 po. contain 4 yds. 2 ft. 8 in.?
2. Find the value of a hundred books if five books are worth 13s. 4d.
3. If 25 qrs. 6 bus. 2 pecks are bought for £206 10s., what is the price per quart?
4. How many boys could get twopence each out of 59 crowns?

Card 15.

1. A person's salary is £585 a year; how much is that weekly?
2. How many 3 lb., 2 lb., and 1 lb. parcels, an equal number of each, can be made from 1 ton 19 cwt. 3 qrs.?
3. How many horses worth £17 18s. 6d. each can be bought for £5,449 4s.?
4. Find the cost of paving a street, 5 fur. 16 poles in length, at 4s. 8d. per yard.

Card 16.

1. A shopkeeper bought 9 dozen hats at 32s. a dozen, and sold them at 3s. 6d. each; what did he gain?
2. How many trees can be planted in a garden, 1 ac. 14 sq. po. in area, allowing 7¼ square yards for each tree?
3. What would half-a-dozen slates cost, if a gross is worth £2 14s.?
4. What distance would be travelled in 13 hours 15 min. at the rate of 35 miles an hour?

Card 17.

1. If 3,584 pints are subtracted from 59 bus. 3 pks. 1 gal. 7 pts., how many pints will remain?
2. A farm of 190 acres is let for £396 12s. 6d.; what is the rent of half an acre?
3. How many yards of calico at 9½d. per yard can be bought for £50 8s. 3d.?
4. How many times is 16 lbs. 15 oz. 14 drs. contained in 10 cwt. 3 qrs. 19 lbs. 7 oz.?

Card 18.

1. A gang of 228 labourers earn £18,969 12s. in a year; how much does each earn weekly?
2. The hind-wheel of a carriage is 13 feet in circumference, and the fore-wheel is 10 feet; how many revolutions will one make more than the other in 19½ miles?
3. What is the cost of 30 gross of slates at twopence each?
4. If a clock ticks every second, how many times does it tick in 37 weeks 5 days 19 hours?

Card 19.

1. Find the value of a cwt. of tea at 3s. 4d. per lb.
2. How many pieces, each 5 inches long, could be cut from a wire 4 miles 560 yards long?
3. If £675 12s. 6d. is divided among 298 men and 392 women, how much will each receive?
4. How many dozen articles at 4s. 11d. each can be bought for £327 9s.?

Card 20.

1. What is the difference in price between a yard of silk and velvet, if 237 yards of silk cost £129 7s. 3d., and 76 yards of velvet cost £46 11s.?
2. A gentleman gave 15 tons of coal to some poor people, giving each 3¾ cwt.; how many persons received the gift?
3. A farmer bought a cow and 37 sheep for £100. He paid £2 5s. 9d. each for the sheep; how much did he pay for the cow?
4. A piece of land, measuring 6 acres, was divided into 125 gardens, 1,040 square yards being allowed for paths; how many square yards did each garden contain?

Card 21.

1. If a barrel of ale, containing 36 gallons, be bought for £2 10s., how much must it be sold at per quart to gain 16s.?
2. If a gentleman's income is 18s. 11½d. a day, what will it be this year (1892)?
3. Bring 295 miles 827 yds. 1 ft. 9 in. to quarter-inches.
4. How many weeks and days are there in the last six months of the year?

Card 22.

1. A person gave a five pound note to pay for his lodgings during the month of January at 2s. 9d. a day; what change did he receive?
2. A chest of tea containing 5 cwt. 1 qr. 24¾ lbs. was made up into 129 packets; how many ounces did each packet contain?
3. If 7 men earn £12 10s. 3d., how much would 11 men earn?
4. How many oranges at two for three halfpence can you buy for £7 17s. 7½d.?

Card 23.

1. A farmer bought six score sheep for £412 10s.; at what price must he sell each sheep to gain 50 guineas?
2. How many tons of soap must be sold at 4½d. per lb. to realise £378?
3. What two coins (one gold and one silver) can you get for one thousand and eighty farthings?
4. How often is 35 ac. 3 ro. 35 sq. po. contained in 14,675 ac. 1 ro.?

Card 24.

1. There are 7 chests of drawers; in each chest there are 10 drawers, in each drawer there are 6 divisions, and in each division there is placed £9 12s. 7¾d. How much money is deposited in the chests?
2. How many bottles, each containing 3 pints, can be filled out of 5 casks of rum, each holding 63 gallons?
3. Three pieces of silk, measuring 75 yards, 129 yards, and 171 yards, respectively, cost £164 1s. 3d.; find the cost per yard.
4. How often is 17 miles 1,509 yards contained in 9,696 miles 987 yards?

Card 25.

1. What is the amount of 170 pounds, 38 half-crowns, 150 crowns, and four thousand pence?
2. How many seconds are there in the months which contain 31 days?
3. From the sum of £19 18s. 3¾d., £60 15s. 8½d., £27 12s. 11¼d., and £35 19s. 6¾d., take £108 16s. 7½d., and multiply the remainder by 121.
4. Find the number of tons, etc., contained in three million thirty thousand three hundred packets of tobacco, each containing two ounces.

Card 26.

1. What is the value of half an acre of land at 5s. 4d. per square yard?
2. How much will remain after dividing £251 13s. 9d. equally among 49 persons?
3. Reduce 7 miles 2 fur. 219 yds. 2 ft. to half-feet.
4. How many times is £57 0s. 8¾d. contained in £3,650 6s. 8d.?

Card 27.

1. If 32 yards of cloth cost £9 10s. 8d., what is the value of 4 yards?
2. How many seconds are there in the months which contain 30 days?
3. How many more farthings are there in 500 guineas than in 500 pounds?
4. How many times could a vessel holding 2 gals. 1 qt. 1 pt. be filled from a tank containing 1,805 gallons?

Card 28.

1. How much would 72 calves cost, if 4 calves cost £17 17s. 7d.?
2. How many times can 8 sq. yds. 7 sq. ft. 96 sq. in. be taken from 796 sq. yds. 4 sq. ft. 112 sq. in.?
3. What amount must be multiplied by 460 to give £2,140,616 14s. 2d.?
4. How many packets of sugar, each containing half a stone, can be weighed from 59 tons 14 cwt.?

Card 29.

1. To how many persons could a florin be given from £5,961 18s.?
2. How many times is 5 drams contained in 5½ tons?
3. If £44 10s. 0½d. be divided equally among 234 boys, 345 girls, and 330 infants, what is each one's share?
4. If 39,807 in. be taken from 2 miles 1,528 yards, how many inches will remain?

Card 30.

1. What sum must be divided by 825 to give a quotient of £12 13s. 8½d.?
2. An equal number of men, women, and boys earned £11 15s. 2d. daily; each man earned 4s. 6d., each woman 1s. 8d., and each boy 9d. How many were there altogether?
3. How many square inches are there in 17 plots, each containing 413 square poles?
4. How many years, days, etc., are there in 46,801,357 seconds?

Card 31.

1. Divide four thousand and forty pounds equally among 37 persons. How much will each receive, and how much will remain?
2. How many ounces are there in 45 times 204 tons 4 cwt. 1 qr. 17 lbs.?
3. If a watch ticks every half-second, how many days, etc., will it take it to tick a million times?
4. How many fourpenny slates could be bought for £260 15s. 8d.?

Card 32.

1. What is gained by buying 92 yards of cloth for £25, and selling it at 5s. 8d. per yard?
2. How much would 8,437 threepenny books cost?
3. How often is 13 tons 13 cwt. 13 lbs. contained in 737 tons 8 cwt. 1 qr. 2 lbs.?
4. How many fathoms are there in the earth's circumference (24,899 miles)?

Card 33.

1. What do 8 horses cost, if 25 can be bought for £466 17s. 6d.?
2. How many pint and half-pint bottles, an equal number of each, will it take to bottle 9½ barrels of beer, a barrel of beer containing 36 gallons?
3. If £14 16s. 8d. be given to each of 78 men and 129 women, how much is given away?
4. How many times does 16 days 17 hours 6 minutes 3 seconds contain 5 hours 48 minutes 47 seconds?

Card 34.

1. Two boats start in a race, and one gains 8 feet upon the other in every 40 yards; how many yards did it gain in three-quarters of a mile?
2. How much must be paid for 6 yards of silk at 7s. 6d. per yard, 8 yards of linen at 1s. 9d. per yard, 11 yards of flannel at 2s. 3d. per yard, and 5 yards of velvet at 8s. 10d. per yard?
3. Reduce 33,806 half-stones to tons, etc.
4. One person wished to exchange 100 gallons of brandy at £1 10s. 6d. per gallon, with another person for beer at 1s. 8d. per gallon; how many gallons of beer should he receive?

Card 35.

1. Ten pounds of tea at 2s. 8d. per lb. are mixed with 12 lbs. at 1s. 9d. per lb.; what is the value of a pound of the mixture?
2. A man saves 16s. 10d. a week. How long will it take him to save £30 6s.?
3. The distance of the moon from the earth is 240,000 miles. If it were possible to go there in a balloon, how many days would it take at the rate of 12½ miles an hour?
4. What is the difference between one hundred thousand farthings and three thousand threepences?

Card 36.

1. If the quotient is £87 15s. 9¼d. and the divisor is 759, what is the dividend?
2. How many times can 78 lbs. 12 drs. be taken from 29 tons 3 qrs. 15 oz.?
3. I paid £13 17s. 11½d. to one person, and £29 2s. 6d. to another person. I then received £8, and found £9 5s. in my purse when I got home. How much had I at first?
4. How many lunar months, etc., are there in 1,498,572 half-minutes?

A Prize of HALF-A-GUINEA will be paid to the Teacher

Card 37.

1. Find the value of 635 gallons of ale at 2½d. per pint.
2. If the product is £30,926 7s. and the multiplier is 546, what is the sum multiplied?
3. Find the area of a square room, the length of a side being 16 ft. 8 in.
4. What is the sum of £529 16s. 5¾d., 89 shillings, 52 sixpences, 7 crowns, 39 farthings, 11 halfpence, 95 pence, and 17 threepences?

Card 38.

1. Reduce 6,855,020 fathoms to miles, furlongs, and yards.
2. The quotient is £66 19s. 10¾d., the remainder is 1s. 8¾d., and the divisor is 125; what is the dividend?
3. What is the weight of 896 bars of iron, each weighing 350 lbs.?
4. Amongst how many persons can you divide £2,226 19s. 2d., giving each person £3 16s. 9½d.?

Card 39.

1. A woman bought four hundred eggs at a halfpenny each, and sold them for a guinea. How much did she gain?
2. How often can 7 gals. 3 qts. 1 pt. be taken from 162 gals., and how much will remain?
3. If an acre of land is worth £64 6s. 8d., what is the value of 123½ acres?
4. The distance between two towns is 282 miles. If a train ran at the rate of 82,720 yards in an hour, how long would it take to perform the journey?

Card 40.

1. What is the railway fare for 750 miles at three halfpence a mile?
2. If 2 lbs. of sugar cost 2½d., what is the value of a ton?
3. Give the difference in inches between 80 miles 4 fur. 37 po. 3 yds. and 5 miles 6 fur. 7 chains 4 yds.
4. A gentleman saves £38 19s. 6d. every calendar month, and spends £1 15s. 9d. daily; what is his annual income?

ANSWERS.

Card 1.

1. 3s. 4d.
2. 527 parcels.
3. £8 15s. 6d.
4. 11s. 4½d.

Card 2.

1. 14 feet.
2. £113 15s.
3. 19 days 20 minutes.
4. 200 lbs.

Card 3.

1. £38 6s. 8d.
2. 904 square yards.
3. £2 7s.
4. 138 miles.

Card 4.

1. 4,017 children.
2. 936 parcels.
3. £427 0s. 8d.
4. £2 7s. 11¼d. + 81 q.

Card 5.

1. £134 8s. 1¼d.
2. 1,680 bottles.
3. £30 16s. 9d.
4. 5 years.

Card 6.

1. 148 farthings.
2. 1 ton 1 cwt. 3 qrs. 4 lbs.
3. £76 7s. 6d.
4. 10 hours 5 minutes.

Card 7.

1. £136.
2. 24 hours.
3. 72 lbs.
4. 1,998 guineas.

Card 8.

1. £205 6s. 8d.
2. 297,858 square yards.
3. 1,998 walnuts.
4. 3,840 steps.

Card 9.

1. 8s. 5¼d.
2. 456 of each.
3. 172,800 seconds.
4. 1,485 times.

Card 10.

1. £16 12s. 6d.
2. 5,320 packages.
3. 8s. 7d.
4. 39 ac. 3 ro. 38 sq. po.

Card 11.

1. 252,576 half-pints.
2. £331 6s. 8¼d.
3. 4,929 seconds.
4. £5 18s. 11d.

Card 12.

1. £70 4s.
2. £2 15s. 7d.
3. 1¾d.
4. 36 times.

Card 13.

1. £3 16s. 6d.
2. 121 yards.
3. £88 17s. 6d.
4. £12.

Card 14.

1. 459 times.
2. £13 6s. 8d.
3. 7½d.
4. 1,770 boys.

Card 15.

1. £11 5s.
2. 742 parcels of each.
3. 304 horses.
4. £277 4s.

Card 16.

1. £4 10s.
2. 726 trees.
3. 2s. 3d.
4. 463¾ miles.

Card 17.

1. 255 pints.
2. £1 0s. 10½d.
3. 1,308 yards.
4. 72 times.

Card 18.

1. £1 12s.
2. 2,376 revolutions.
3. £36.
4. 22,878,000 times.

Card 19.

1. £18 13s. 4d.
2. 54,720 pieces.
3. 19s. 7d.
4. 111 dozen.

Card 20.

1. 1s. 4d.
2. 80 persons.
3. £15 7s. 3d.
4. 224 square yards.

Card 21.

1. 5½d.
2. £346 18s. 9d.
3. 74,883,972 quarter-inches.
4. 26 weeks 2 days.

Card 22.

1. 14s. 9d.
2. 76 ounces.
3. £19 13s. 3d.
4. 2,522 oranges.

Card 23.

1. £3 17s. 6d.
2. 9 tons.
3. A sovereign and half-a-crown.
4. 408 times.

Card 24.

1. £4,045 11s. 3d.
2. 840 bottles.
3. 8s. 9d.
4. 543 times.

Card 25.

1. £228 18s. 4d.
2. 18,748,800 seconds.
3. £4,294 17s. 4¾d.
4. 169 tons 2 cwt. 3 lbs. 8 oz.

Card 26.

1. £645 6s. 8d.
2. ¼d.
3. 77,878 half-feet.
4. 64 times.

Card 27.

1. £1 3s. 10d.
2. 10,368,000 seconds.
3. 24,000 farthings.
4. 760 times.

Card 28.

1. £321 16s. 6d.
2. 89 times + 11,296 sq. in.
3. £4,653 10s. 3¾d.
4. 19,104 packets.

Card 29.

1. 59,619 persons.
2. 630,784 times.
3. 11¾d.
4. 141,921 inches.

Card 30.

1. £10,465 9s. 4¼d.
2. 102 persons.
3. 275,251,284 square in.
4. 1 yr. 176 dys. 16 hrs. 22 min. 37 sec.

Card 31.

1. £109 3s. 9¼d. and 5¾d. over.
2. 329,306,160 ounces.
3. 5 dys. 18 hrs. 53 min. 20 sec.
4. 15,647 slates.

Card 32.

1. £1 1s. 4d.
2. £105 9s. 3d.
3. 54 times.
4. 21,911,120 fathoms.

Card 33.

1. £149 8s.
2. 1,824 bottles of each kind.
3. £3,070 10s.
4. 69 times.

Card 34.

1. 88 yards.
2. £6 7s. 11d.
3. 105 tons 12 cwt. 3 qrs. 1 st.
4. 1,830 gallons.

Card 35.

1. 2s. 2d.
2. 36 weeks.
3. 800 days.
4. £66 13s. 4d.

Card 36.

1. £66,631 10s. 0¾d.
2. 833 times + 8,164 drs.
3. £44 5s. 5½d.
4. 18 months 2 weeks 2 da 8 hours 6 minutes.

Card 37.

1. £52 18s. 4d.
2. £56 12s. 10d.
3. 30 sq. yds. 7 sq. ft. 112 s.q. in.
4. £537 19s. 11d.

Card 38.

1. 7,789 miles 6 fur. 80 yds.
2. £8,374 8s. 8½d.
3. 140 tons.
4. 580 persons.

Card 39.

1. 4s. 4d.
2. 20 times and 4½ gals. over.
3. £7,945 3s. 4d.
4. 6 hours.

Card 40.

1. £4 13s. 9d.
2. £11 13s. 4d.
3. 4,737,906 inches.
4. £1,120 2s. 9d.

Teacher is the **FIRST** to point out an Error in the above Answers.